FINAL

THEODORE ROOSEVELT NATIONAL PARK ELK MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT STATEMENT

INTERNAL SCOPING REPORT

Prepared for:

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1.0 INTRODUCTION

This report describes information related to elk (*Cervus elaphus*) management at Theodore Roosevelt National Park (TRNP), and will be the basis for the subsequent evaluation under the National Environmental Policy Act (NEPA). Historically elk were a prominent native species in the badlands. Reflecting on a trip down the Little Missouri River, John James Audubon noted in 1843, "We saw 3 elk swimming across it and the number of this fine species of deer that are about us now is almost inconceivable" (TRNP 2004). However, elk populations in the badlands began to decline in the 1880s. Theodore Roosevelt noted in 1888, "This stately and splendid deer, the lordliest of its kind throughout the world, is now fast vanishing. In our own neighborhood it is already almost a thing of the past" (TRNP 2004). By the late 1800s, elk were extirpated from the badlands (TRNP 2004).

Elk were reintroduced to the South Unit of TRNP (approximately 46,000 acres) in March of 1985. This reintroduction was intended to enhance visitor experience, restore an extirpated native species, and to restore a missing component of the badlands ecosystem. The South Unit is surrounded by a seven-foot high woven fence, which has numerous natural and specially designed crossings to allow for natural movement of most wildlife. Large predators (wolves and bears) have been extirpated since the late 1800s, and effective natural predation on ungulates is limited to that which occurs on young by coyotes and bobcats. Mountain lions also occur within TRNP in unknown numbers, but their effect on elk population dynamics is likely to be very slight.

TRNP originally introduced 47 elk. Since their reintroduction, the elk population has exhibited a high growth rate because of the lack of natural predators and presence of good elk habitat within TRNP. At the time of elk reintroduction, it was believed that elk would use areas outside TRNP and would migrate beyond park boundaries. It was also believed that hunting administered by the North Dakota Game and Fish Department (NDGF) outside TRNP would help control the elk population. However, relatively few elk leave TRNP and hunters have typically harvested less than 35 elk per year since 1997 in areas adjacent to the park.

Because TRNP was concerned about how elk might affect other park resources (e.g., plant associations and other wildlife species), research was initiated in 1985 to provide insight into the ecology and population dynamics of elk in the South Unit. A forage allocation model was developed using diet and population data on major ungulates in TRNP (i.e., bison, elk, feral horses, and mule deer). Based on that model, a maximum population objective of approximately 360 elk was established for the South Unit of TRNP.

To address the increasing elk population within TRNP, roundups and translocation of live elk were necessary in 1993 and 2000 to reduce the elk population. For these roundups, helicopters were used to direct animals to a handling facility. Corralled elk were then transferred offsite to other federal entities, Indian tribes, and states for restoration programs in North Dakota, South Dakota, and Kentucky.

On July 26, 2002, the Director of the National Park Service (NPS) issued a memorandum regarding NPS response to chronic wasting disease (CWD) of deer and elk. This memorandum established policy for managing elk or deer that exhibit signs of CWD and for proposed translocation of deer or elk. Under this memorandum, deer or elk cannot be translocated from areas where CWD is known to occur or from areas where documentation is inadequate to confirm the absence of the disease. Although it is not possible to confirm the total absence of the disease, the memorandum requires a 99 percent confidence that less than 1 percent of the deer or elk population has CWD.

Since this memorandum was issued, TRNP has not translocated elk. A third reduction was scheduled for January 2003. However, because TRNP could not meet the standard of CWD testing required by the July 26, 2002 memorandum, this roundup was cancelled. Current census results, (accounting for preliminary estimates of detection rates) suggest the elk population was 503 animals in January of 2004 (standard error of 44). Population growth rates have not declined as elk numbers have increased. Resources required by elk (forage, water, and shelter) still appear to be available to elk. Based on these factors, the population growth rate is expected to remain between 20 to 25 percent per year in the future.

Since 1985, four MOUs have been signed among the NPS, the State of North Dakota, and the U.S. Forest Service (USFS) regarding the management of elk in and around TRNP. Responsibilities for management of elk within TRNP and outside TRNP are established in these MOUs. TRNP is responsible for elk located within the park boundary and NDGF is responsible for elk located outside the TRNP boundary. The NDGF is a cooperating agency in preparing this elk management plan. The USFS was originally a commenting agency, but following a recent invitation from the NPS, the USFS has agreed to be a cooperating agency for this project (Pieper 2004). **Appendix A** includes the MOUs and USFS letter agreeing to be a cooperating agency.

A two-day internal scoping meeting was held May 25 and 26, 2004 in Medora, North Dakota to discuss development of an elk management plan for TRNP. Representatives from the NPS - Washington Office/Environmental Quality Division (EQD), NPS – Washington Office/Biological Resource Management Division (BRMD), NPS – Midwest Region, TRNP (including a former TRNP employee), NDGF, USFS, U.S. Geological Survey (USGS), and Greystone Environmental Consultants, Inc. (Greystone) attended this meeting.

The objectives of this meeting were to:

- Review relevant legislation, regulations, and policies;
- Summarize TRNP's enabling legislation, park purpose, and park significance;
- Summarize historic and current issues and strategies for elk management at TRNP;
- Develop the purpose of and need for action;
- Identify project objectives;
- Identify issues and impact topics;
- Develop a range of preliminary alternatives;
- Identify other relevant local, state, and federal actions, plans, and policies;
- Develop a framework for the public participation strategy;
- Identify stakeholders and other parties potentially interested in this project;
- Establish protocols and points of contact for project coordination and communication; and
- Discuss the future project schedule.

The information included in this report is based on background information and literature provided by staff at TRNP and discussions from the internal scoping meeting. The report describes the purpose of and need for action, resource concerns, and objectives identified during the meeting. Potential components of alternatives and issues developed during the internal scoping meeting are also included. Information presented in this report includes the following:

2.0 Relevant Legislation, Regulations, and Policies – summarizes NPS and other federal legislation, regulations, and policies that are relevant to this project.

3.0 TRNP Background – summarizes TRNP's enabling legislation, purpose and significance of the park, and history of elk management within TRNP.

4.0 Purpose of and Need for Elk Management – summarizes the purpose, need, and objectives for the elk management plan.

5.0 Preliminary Issues – describes preliminary issues related to elk management.

6.0 Preliminary Alternatives – summarizes components of preliminary alternatives developed during the internal scoping meeting.

7.0 Relationship to Other Plans, Policies, and Activities – identifies actions on private or other agency lands that could occur in the foreseeable future and could affect or be affected by this project.

8.0 Public Participation Strategies – provides an overview of the public participation strategy for this project.

9.0 Coordination and Communication Protocols – describes the protocols for project-related communication and maintenance of the administrative record.

10.0 Annotated Bibliography and Data Needs – provides an annotated bibliography of available data and describes additional data collection needs.

11.0 Project Schedule – summarizes the general schedule for this project.

2.0 RELEVANT LEGISLATION, REGULATIONS, AND POLICIES

The following sections summarize federal legislation, regulations, and the NPS's management policies that are relevant to this project.

NPS Legislation and Policies Regarding Conservation

The NPS Organic Act of 1916 stipulates that park units are to be managed "to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (16 USC 1). This mandate is reiterated in a 1978 amendment, which states that the NPS must conduct its actions in a manner that will ensure no "derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress" (16 USC 1 a-1).

The Organic Act and its amendments afford the NPS latitude when making resource decisions that balance visitor recreation and resource preservation. By these acts Congress "empowered [the NPS] with the authority to determine what uses of park resources are proper and what proportion of the parks' resources are available for each use" (Bicycle Trails Council of Marin v. Babbitt, 82 F.3d 1445, 1453 (9th Cir. 1996)).

However, courts have consistently interpreted the Organic Act and its amendments to elevate resource conservation above visitor recreation. Michigan United Conservation Clubs v. Lujan, 949 F.2d 202, 206 (6th Cir. 1991) states, "Congress placed specific emphasis on conservation." The National Rifle Association of America v. Potter, 628 F. Supp. 903, 909 (D.D.C. 1986) states, "In the Organic Act Congress speaks of but a single purpose, namely, conservation." The NPS Management Policies, which state the conditions or processes that must be undertaken, considered, or followed before taking a management action in any unit of the national park system, also recognize that resource conservation takes precedence over visitor recreation. "When there is a conflict between conserving resources and values and providing for enjoyment of them, conservation is to be predominant" (NPS Management Policies 2001, sec. 1.4.3).

Because conservation remains predominant, the NPS seeks to avoid or minimize adverse impacts on park resources and values. The NPS Organic Act gives the Secretary of the Interior discretion to provide "for the destruction of such animal and of such plant life as may be detrimental to the use of any of said parks, monuments, or reservations" (16 USC 3), and the Management Policies of 2001 give the NPS discretion to allow negative impacts when necessary (section 1.4.3). However, while some actions and activities cause impacts, the NPS cannot allow an adverse impact that constitutes resource impairment (NPS Management Policies 2001, section 1.4.3). The Organic Act prohibits actions that impair park resources unless a law directly and specifically allows for such actions (16 USC 1 a-1). An action constitutes an impairment when its impacts "harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values" (NPS Management Policies 2001, section 1.4.4). To determine impairment, the NPS must evaluate "the particular resources and values that would be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts" (NPS Management Policies 2001, section 1.4.4).

NPS Policies Regarding Animal Management

General management concepts (Section 4.1) and other policies for management of animals are provided in the NPS 2001 Management Policies (NPS 2001). The following sections summarize relevant NPS policies.

General Management Concepts

Section 4.1 of the 2001 Management Policies provides the guidance on general resource management within national parks. The Service "will try to maintain all the components and processes of naturally evolving park ecosystems, including the natural abundance, diversity, and genetic and ecological integrity of the plant and animal species native to those ecosystems." In this context, the term "natural" is used to describe the condition of resources that would occur in the absence of human dominance over the landscape. Section 4.1 also provides guidance on restoration of natural conditions within parks:

> Biological or physical processes altered in the past by human activities may need to be actively managed to restore them to a natural condition or to maintain the closest approximation of the natural condition in situations in which a truly natural system is no longer attainable.

NPS-77: Natural Resources Management Guideline also provides guidance to park managers for all planned and ongoing natural resource management activities. Managers must follow all federal laws, regulations, and policies. This document also provides guidance for park management to design, implement, and evaluate comprehensive natural resource management programs.

Management of Biological Resources

Section 4.4.1 of the NPS Management Policies provides the following general principle for management of biological resources, "The National Park Service will maintain the … natural abundances, diversities, dynamics, distributions, habitats, and behaviors of native plant and animal populations."

Management of Native Plants and Animals

Management Policies 2001 (section 4.4.2) provides guidance for management of plant and animal species:

> Whenever possible, natural processes will be relied upon to maintain native plant and animal species, and to influence natural fluctuations in populations of these species. The [NPS] may intervene to manage individuals or populations of native species only when such intervention will not cause unacceptable impacts to the populations of the species or to other components and processes of the ecosystems that support them, and when at least one of the following conditions exists:

- Management necessary:
    - because a population occurs in an unnaturally high or low concentration as a result of human influences (such as loss of seasonal habitat, the extirpation of predators, the creation of highly productive habitat through agriculture or urban landscapes) and it is not possible to mitigate the effects of the human influences;
    - to protect specific cultural resources of parks;

- to accommodate intensive development in portions of parks appropriate for, and dedicated to, such development;
- to protect rare, threatened, or endangered species;
- to protect human health as advised by the U. S. Public Health Service (which includes the Centers for Disease Control and the NPS Public Health Service Program);
- to protect property in cases in which it is not possible to change the pattern of human activities; or
- to maintain human safety in cases in which it is not possible to change the pattern of human activities.

- Or removal of individuals or parts thereof
  - is part of an NPS research project described in an approved management plan, or is part of research being conducted by others who have been issued a scientific research and collecting permit;
  - is done to provide plants or animals for restoring native populations in parks or cooperating areas without diminishing the viability of the park populations from which the individuals are taken; or meets specific park management objectives.

Section 4.4.2 also provides guidance on population monitoring requirements:

> The NPS will assess the results of managing plant and animal populations by conducting follow-up monitoring or other studies to determine the impacts of the management methods on non- targeted, as well as targeted, components of the ecosystem.

NPS Actions that Remove Plants and Animals

Management Policies 2001 (section 4.4.2.1) provides further guidance for NPS actions that involve removal of plants and animals:

> …the [NPS] may directly reduce the animal population by using several animal population management techniques, either separately or together. These techniques include relocation, public hunting on lands outside the park, habitat management, predator restoration, reproductive intervention, and destruction of animals by NPS personnel or their authorized agents. Where animal populations are reduced, destroyed animals may be left in natural areas of the park to decompose.
>
> Whenever the [NPS] removes plants or animals, manages plant or animal populations to reduce their sizes, or allows others to remove plants or animals for an authorized purpose, the [NPS] will seek to ensure that such removals will not cause unacceptable impacts to native resources, natural processes, or other park resources. Whenever the [NPS] identifies a possible need for reducing the size of a park plant or animal population, the [NPS] will use scientifically valid resource information obtained through consultation with technical experts, literature review, inventory, monitoring, or research to evaluate the identified need for population management, and to document it in the appropriate park management plan.

When planning and implementing animal population management actions, the NPS will prevent these actions from interfering broadly with:

- Natural habitats, natural abundances, and natural distributions of native species and natural processes;

- Rare, threatened, and endangered plant or animal species, or their critical habitats;
- Scientific study, interpretation, environmental education, appreciation of wildlife, or other public benefits;
- Opportunities to restore depressed populations of native species; or
- Breeding or spawning grounds of native species.

Harvest of Plants and Animals by the Public

Section 4.4.3 provides guidance for harvest of animals by the public. Public harvesting of designated species of animals may be allowed within a park when "Hunting, trapping, subsistence use, or other harvesting is specifically authorized by statute or regulation and not subsequently prohibited by regulation." TRNP's enabling legislation does not specifically authorize hunting, trapping, subsidence, use, or other harvesting of elk. When allowed and subject to NPS control, harvesting is only allowed when the aforementioned monitoring requirements are met and when it has been determined that harvesting "will not unacceptably impact park resources or natural processes, including natural distributions, densities, age-class distributions, and the behavior of:

- Harvested species,
- Native species that the harvested species use for any purpose, or
- Native species that use the harvested species for any purpose.

Harvesting or habitat management programs must be managed to "conform with applicable federal and state regulations and in consultation and cooperation, as appropriate, with individual states or tribal governments. Habitat manipulation for a harvested species may include "restoration of a disturbed area to its natural condition so it can become self-perpetuating, but will not include the artificial manipulation of habitat to increase the numbers of harvested species above its natural range in population levels."

Director's Guidance Memorandum (July 26, 2002)

On July 26, 2002, the NPS Director issued a memorandum intended to provide regions and parks with guidance on NPS response to chronic wasting disease of deer and elk. This memorandum established guidelines for managing elk or deer that exhibit signs of CWD and for proposed translocation of deer or elk. This memorandum prohibits translocation of deer or elk "from areas where CWD is known to occur or from areas where there is inadequate documentation to confirm absence of the disease." The memorandum also defined what is sometimes referred to as the "99-1 Rule." Under this rule, a park must be 99 percent confident that CWD is prevalent in less 1 percent of the elk population before elk can be translocated from TRNP. Because there is no live CWD test for elk, the memorandum has functioned essentially as a moratorium that prevents translocation of deer or elk.

Other Legislation, Compliance, and Policies

In addition to NPS legislation, policies, and guidance, there are other laws, regulations, and guidance that govern the NPS regarding its efforts to manage elk in TRNP. Based on the scope of this plan, these include:

Redwoods Act

The Redwoods Act reasserted the system-wide standard of protection established by Congress in the original Organic Act. It stated:

> The authorization of activities shall be construed and the protection, management, and administration of these areas shall be conducted in light of the high public value and integrity of the National Park System and shall not be exercised in derogation of the values and purposes for which these various areas have been established, except as may have been or shall be directly and specifically provided by Congress (P.L. 95-250, U.S.C. Sec 1a-1).

The act intends that management actions and consideration of management alternatives in the National Park System be limited to the intent of Congress as expressed in the park's enabling legislation.

National Environmental Policy Act of 1969, as Amended

NEPA section 102(2)(c) requires that an EIS be prepared for proposed federal actions that may significantly affect the quality of the human environment or are major or controversial federal actions. One reason that an EIS will be prepared for this project is that controversy is expected over management of elk within a national park.

Endangered Species Act of 1973, as Amended

The Endangered Species Act requires that all federal agencies consult with the Secretary of the Interior regarding all projects and proposals having potential impacts on federally endangered or threatened plants and animals.

The National Historic Preservation Act of 1966, as Amended

Section 106 of the National Historic Preservation Act requires federal agencies to consider the effects of their undertakings on properties listed on, or potentially eligible for listing on, the National Register of Historic Places. All actions affecting the parks' cultural resources must comply with this legislation.

Historic Sites, Buildings, and Antiquities Act, 1935

The Historic Sites, Buildings, and Antiquities Act establishes "national policy to preserve for public use historic sites, buildings, and objects of national significance." This act gives the Secretary of the Interior broad powers to protect these properties, including the authority to establish and acquire nationally significant historic sites.

Title 36, Code of Federal Regulations (1992)

Title 36 provides the regulations "for the proper use, management, government, and protection of persons, property, and natural and cultural resources within areas under the jurisdiction of the National Park Service" (36 CFR 1.1(a)).

Executive Order 11990, "Protection of Wetlands"

Executive Order 11990 directs federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative.

Executive Order 12898, "Environmental Justice in Minority Populations and Low-Income Populations"

The NPS must address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities, including planning projects, on minority and low-income populations.

Federal Food, Drug, and Cosmetic Act (Federal Drug Administration)

The U.S. Department of Agriculture (USDA) regulates most meats and meat products produced in the U.S. under the authority of the Federal Meat Inspection Act. This law is very specific as to the types of meat products that are to be regulated by USDA and includes cattle, sheep, swine, goats, horses, mules, and reindeer. The Food and Drug Administration (FDA) regulates all other animals not listed in the Federal Meat Inspection Act, such as game animals, under the authority of the Federal Food, Drug, and Cosmetic Act. Under this law, FDA is charged with assuring that all foods for which it has regulatory responsibility are safe and wholesome to consume. FDA uses existing scientific data, expert opinion, and risk assessment in developing science-based food safety policies. Although there is currently no evidence that CWD poses a human health risk, future research may demonstrate a potential food or cosmetic safety hazard. Therefore, FDA seeks the input of the transmissible spongiform encephalopathy (TSE) Advisory Committee in determining the risk, if any, of consuming meat from an infected elk. Under this act, it is illegal to introduce or deliver for introduction into interstate commerce any food, drug, device, or cosmetic that is adulterated or misbranded.

Lacey Act of 1900

The Lacey Act of 1900 was established to "aid in the restoration of game and other wild birds in parts of the U.S. where they have become scarce or extinct and to regulate the introduction of American or foreign birds or animals in localities where they have not previously existed." Information on the Lacey Act is provided in an article titled, "The Lacey Act: America's Premier Weapon in the Fight Against Unlawful Wildlife Trafficking" (Anderson 1995) and is summarized here. The Lacey Act and its amendments prohibit the failure to mark, as well as falsification of documents for, most wildlife shipments. The Lacey Act also prohibits trade in wildlife, fish, or plants that have been illegally taken, possessed, transported, or sold. The Lacey Act does not apply to legally taken wildlife that is shipped through a state that prohibits possession of the wildlife, as long as the wildlife is destined for a location where its possession is legal.

USDA APHIS

The USDA Animal and Plant Health Inspection Service (APHIS) is the agency charged with responding to and eradicating CWD from captive herds. Since 1997, when the agency began surveillance for CWD in captive elk, the agency has sponsored several programs and actions toward the goal of eradicating this wildlife disease. Beginning in 2001, APHIS implemented a program for CWD testing and indemnifying owners of captive elk herds that volunteered for herd depopulation. USDA provides diagnostic and surveillance support to States with active free-ranging CWD programs. State animal health officials and APHIS personnel are working to gather epidemiological information that may help to explain how the disease spreads.

Interagency Policy

In 2002, the *Plan for Assisting States, Federal Agencies, and Tribes in Managing Chronic Wasting Disease in Wild and Captive Cervids* was written by an interagency task force (APHIS 2002). This

management plan was developed by a task force including USDA, the U.S. Department of Interior (DOI), Tribal, and State representatives at the request of Congress. To date, this plan has not been officially published/accepted by the federal government. However, it is being used in the field at the state and federal level. This plan establishes a coordinated approach to performing research and management actions and for sharing information across geographic boundaries and agency jurisdictions. It includes information on communications, scientific and technical information dissemination, diagnostics, disease management, research and surveillance.

The APHIS proposed rule, Chronic Wasting Disease (CWD) Herd Certification Program and Interstate Movement of Captive Deer and Elk, was published in the Federal Register on December 24, 2003 with comments due February 23, 2004 (9 CFR Parts 55 and 81). The proposed rule would:

> … establish a herd certification program to eliminate chronic wasting disease from captive cervids in the United States. Participating deer and elk herds would have to follow program requirements for animal identification, testing, herd management, and movement of animals into and from herds. After 5 years of enrollment with no evidence of chronic wasting disease, a herd would be granted "certified"' status. Owners of herds could enroll in a State program that we have determined has requirements equivalent to the Federal program, or could enroll directly in the Federal program if no State program exists. We are also proposing to establish interstate movement requirements to prevent the interstate movement of deer and elk that pose a risk of spreading CWD. These actions are intended to eliminate CWD from the captive deer and elk herds in the United States.

The APHIS proposed rule also includes a statement that captured free-ranging cervids will be considered captive cervids. This rule, if passed, would then apply to any parks that capture, and propose to translocate cervids outside of park unit boundaries. If this rule is passed, parks would have to show active surveillance and monitoring in order to translocate cervids.

Land and Resource Management Plan for the Dakota Prairie Grasslands (DPG LRMP) Northern Region (USFS 2001)

The DPG LRMP offers guidance for all resource management activities on the Dakota Prairie Grasslands. It identifies management standards and guidelines; and describes resource management practices, levels of resource use and protection, and the availability and suitability of lands for resource management. This plan includes several guidelines and objectives pertaining to management of resources in order to complement native species and their habitat needs while balancing management of other resources and uses, including livestock grazing.

USFS Policies

The Little Missouri National Grassland (managed by the USFS), which borders all units of TRNP (**Figure 2-1**), is the largest national grassland in the country. Much of the adjacent USFS lands are used as rangeland. Oil and gas exploration has been prevalent during the past 25 years. The Little Missouri River provides scenic canoeing opportunities in the spring when water flows are sufficient. In the winter, snowmobiling occurs on and along the river. The Little Missouri Badlands offer the only bighorn sheep hunting in the state. In addition to hunting, popular activities include viewing scenery, camping, hiking, and horseback riding. The grassland experienced an average of 95,900 recreation visitor days each year between 1992 and 1996 (USFS 2001).

Figure 2-1 Project Location

The DPG LRMP, which includes the Little Missouri Grassland, guides on-the-ground natural resource management to ensure sustainable ecosystems and to provide multiple benefits, including forage for livestock and wildlife habitat. This plan does not include any policies or management actions specific to elk. Big game is only mentioned as a resource that is present within the grasslands.

State Policies

Each year the NDGF publishes a booklet of the applicable regulations for each of its game species, including elk. This guide includes the hunting season dates, hunter eligibility, weapon restrictions, tagging requirements, transportation and storage, hunt unit descriptions, and other information. Hunting is the primary tool used by the NDGF to manage game populations. NDGF exercises flexibility in terms of how big game is managed. Depending on population objectives, NDGF may increase the number of licenses issued when population numbers are increasing. Once game populations are reduced, fewer licenses may be issued in following years. NDGF policy does not allow the use of the reproductive control methods as a tool for big game herd management.

There are two elk hunting units located adjacent to TRNP, units E3 and E4 (**Figure 2-1**). Within these units, there are three elk hunting seasons:

- E3 (any legal weapon) – August 6 through 22 (2004 tentative opener)
- E4 Early (any legal weapon) – August 6 through 22 (2004 tentative opener)
- E4 Late (any legal weapon) – August 13 through 22 (2004 tentative opener)

Special regulations apply to unit E4 for landowners with at least 160 acres of land within the unit. They can qualify for an annual elk license to hunt elk on their property. These landowners can take either bull or cow elk. Seventeen of these special licenses are still in existence. Non-landowner "once in a lifetime" licenses are also issued each year. The number of non-landowner licenses varies, but currently averages 50 licenses per year. NDGF meets with landowners every year to discuss game management within hunting units where their properties are located. In the past two years, the private landowners in hunting units E3 and E4 have waived their opportunity to meet with the NDGF and accepted the management practices of the previous year.

The state of North Dakota currently has no specific regulations regarding CWD in free-ranging cervids. However, the state does have several regulations pertaining to testing of captive cervids and wildlife and movement of animal parts (CWD Alliance 2004):

- Standard Regulations – Captive cervids meet certain risk assessment standards or have a health certificate. Elk must be free of all contagious and infectious disease.

- Regulations for Captive Cervids – Private game farms must complete a 5-year risk assessment that is faxed to the Board of Animal Health prior to entry permit issuance. Cervids and originating herds must have no prior history of emaciation, depression, excessive salivation or thirst, or neurological disease.

- Movement of Animal Parts – On August 27, 2003, North Dakota implemented a ban on importation of whole carcasses and carcass parts of white-tailed deer, mule deer, and elk from areas within states or provinces with documented occurrences of CWD in wild populations and private game farms. Hunters may import the following parts: meat that is cut and wrapped (commercially or privately), quarters or other portions of meat with no part of spinal column or head attached, boned out meat, hides without heads attached, clean (no meat or tissue attached)

skull plates with antlers attached, antlers with no meat or tissue attached, upper canine teeth (buglers, whistlers, or ivories), and finished taxidermy heads.

In April of 2004, 24 states (including North Dakota) signed Multi-state Guidelines for Chronic Wasting Disease Management in Free-ranging White-tailed Deer, Mule Deer, and Elk. These guidelines establish five primary goals for CWD management:

1. Minimize the potential for CWD to spread beyond current affected areas.

2. Manage infection rates (prevalence) within existing affected areas using results and techniques provided by ongoing and future research according to objectives set by each state. Based on current understanding of CWD in free-ranging deer and elk, eradication of CWD may not be a justified or realistic management objective within endemic areas.

3. Determine the status and extent of CWD when the disease is discovered in a previously unknown location and, if determined to be feasible, attempt to eliminate the disease.

4. Support and conduct, on a priority basis, applied research that will facilitate continued expansion of knowledge of CWD.

5. Provide timely, complete, and accurate information about all facets of CWD to personnel of participating agencies and the public of involved states and throughout the United States.

Under this agreement, states will use the best scientific information available and take all reasonable and necessary steps, consistent with these guidelines, to achieve these five objectives. Further, representatives will meet periodically on the status of the disease and management efforts in their respective states. Representatives will also periodically review these guidelines and associated objectives to provide additional guidance as needed or as dictated by new information.

3.0 TRNP BACKGROUND

This section summarizes TRNP's enabling legislation and TRNP's purpose and significance. Elk management and research at TRNP is also summarized.

Park Location and Brief Description

TRNP lies in the Little Missouri Badlands of western North Dakota. This 70,447-acre park is divided into a North Unit (24,070 acres), a South Unit (46,159 acres), and the Elkhorn Ranch Unit (218 acres). TRNP was first established as a memorial to honor Theodore Roosevelt and is dedicated to the preservation and public enjoyment of historic, scenic, and natural resources. In 1978, 29,920 acres were designated as wilderness. A central, unifying feature of TRNP is the free-flowing Little Missouri River, which meanders through the South and North Units and forms the eastern boundary of the Elkhorn Ranch Unit. A 7-foot woven-wire fence encloses both the North and South Units. The Elkhorn Ranch and South Units are in Billings County. The North Unit is in McKenzie County.

TRNP is located within the mixed-grass prairie region of the Northern Great Plains. The rough topography and variety of soils resulted in the formation of several different plant communities. Dry shrub communities characterize upland draws with southern exposures while shrub thickets and hardwoods, such as green ash, shelter in more shaded coulees. Floodplains support cottonwood forest and, in some areas, dense stands of low growing willow. Native prairie grasses and forbs dominate the gently rolling uplands and plateaus. This complex ecosystem is host to many plants and animals, including some non-native species.

Several cultural resources complement TRNP's natural resources. Two of these (the Maltese Cross Ranch Cabin and the Elkhorn Ranch site) have direct associations with Theodore Roosevelt and are essential to visitors' understanding of Roosevelt's badlands experiences and their effect upon him. TRNP affords individuals the opportunity to experience the badlands environment and to understand and enjoy it as Roosevelt once did. The undeveloped backcountry provides excellent opportunities for hiking, horseback riding, and exploring.

Enabling Legislation

TRNP's natural resources played a significant role in shaping the life of Theodore Roosevelt during the era of the open range cattle industry, which consequently influenced his role as a conservationist while President of the United States. The park had its beginnings in August 1934, when Civilian Conservation Corps (CCC) camps, under the sponsorship of the North Dakota State Historical Society and the direction of the NPS, began work in what was then known as Roosevelt Regional State Park. In 1934, a federal relief program was initiated to purchase lands from farmers wanting to sell. In the badlands, these sub-marginal lands were converted to government grazing pastures and made available for park development in the form of Roosevelt Regional Park, which was later designated a Recreational Demonstration Area (RDA) administered by the NPS.

On 25 April 1947, a locally supported congressional bill that became Public Law (PL) 38 (61 Stat. 52) established the area as Theodore Roosevelt National Memorial Park. As enacted under this law, lands were "dedicated and set apart as a public park for the benefit and enjoyment of the people," subject to the provision of the Act of August 25, 1916 (39 Stat. 535), entitled an Act to Establish the National Park Service "…which purpose is to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of same in such manner and by such means as will leave them

unimpaired for the enjoyment of future generations." The act of 10 June 1948 (62 Stat. 352) amended the establishing act, added more land, and also corrected the description of the Elkhorn Ranch Unit lands. When reporting on the bill to establish Theodore Roosevelt National Memorial Park, the Committee on Public Lands recognized the threefold value of the North Dakota Badlands: the natural features of scenic and scientific interests, the historical value, and the recreational potential.

The act of 12 June 1948 (62 State. 384) added the North Unit to the park. The act of 24 March 1956 (70 Stat. 55) added lands on the north side of the town of Medora for park headquarters development. This act also authorized the Secretary of the Interior to make future boundary adjustments along U.S. 10 and U.S. 85, due to realignment with certain acreage limitations. The secretary adjusted the boundaries in 1963 to conform to the realignment of U.S. 10, now reconstructed and designated I-94. This excluded 398 acres and added 459 acres.

The act of 10 November 1978 designated the memorial park "Theodore Roosevelt National Park" (PL 95-625, 92 Stat. 3467). It also designated 29,920 acres within the park as wilderness and authorized a boundary adjustment at the North Unit to add about 146 acres to and delete about 160 acres from the park. There are 19,410 acres of wilderness in the North Unit and 10,510 acres in the South Unit.

Park Purpose

The purpose of TRNP is reflected in the legislative intent of the park summarized in the following statements. Other legislation affecting the National Park System, such as the 1916 Organic Act, the Wilderness Act, the National Environmental Policy Act, the Historic Preservation Act, and the Endangered Species Act, also influence management decisions at TRNP.

- Memorialize and pay tribute to Theodore Roosevelt for his enduring contributions to the conservation of our nation's resources.
- Conserve, unimpaired, the scenery and the natural and cultural resources, and facilitate scientific interests in TRNP.
- Provide for the benefit, use, and enjoyment of the people.
- Manage the Theodore Roosevelt Wilderness as part of the National Wilderness Preservation System.

Park Significance

The significance of TRNP is summarized in the following statements, capturing the essence of the park and its importance to our nation's natural and cultural heritage.

- The colorful North Dakota badlands provide the scenic backdrop to the park, which memorializes the 26th president for his enduring contributions to the conservation of our nation's resources.
- TRNP allows people to enjoy panoramic vistas and a sense of solitude, inspiration, and timelessness similar to Theodore Roosevelt's experience in the Dakota Territory in the 1880s.
- TRNP provides an opportunity to learn about an environment and way of life that helped shape Theodore Roosevelt's attitudes and philosophy regarding conservation.

- The Little Missouri River has shaped the land, which is home to a variety of prairie plants and animals including bison, elk, bighorn sheep, and wild horses.

- A significant park experience is created by the interplay of natural forces, including weather, vegetation, wildlife, vistas, smells, color and shape of landform, air quality, varied light, and seasons.

- TRNP contains one of the few islands of designated wilderness in the Northern Great Plains.

- TRNP is the most popular visitor attraction in North Dakota and provides significant economic and employment benefits for the state and region.

- Ongoing geological forces create spectacular examples of badlands and provide opportunities for visual interpretation of erosion processes.

- TRNP is designated as a Class I air quality area (Clean Air Act Amendments, 1977), providing for clean air, brilliantly clear day and night skies, and outstanding examples of a relatively unpolluted environment.

- Important cultural resources associated with prehistoric and historic occupation and use attest to millennia of human interaction with the rugged badlands environment.

- TRNP is a prime example of ecosystem restoration in progress, including reestablishing native flora and fauna and managing non-native species.

- TRNP has one of the largest petrified forests in the United States, providing outstanding examples for visitor viewing.

TRNP Management Documents

General Management Plan, TRNP (1987)

A General Management Plan (GMP) is developed every 15 to 20 years and is subject to public input and a NEPA analysis. This plan describes long-term management objectives for TRNP. The most recent GMP is dated June 2, 1987. Management objectives described in this plan include:

- Protect, preserve, and manage the natural environment to ensure ecosystem integrity while providing for visitor enjoyment and safety.

- Allow natural processes to continue with a minimum of human disturbance.

- Implement necessary management activities, such as exotic plant control, prescribed burning, wildlife habitat enhancement…to preserve the "natural process."

Strategic Plan and Annual Performance Plan, TRNP (2001)

The plan identifies mission goals over the next 5 or more years for TRNP. This includes the formulation of long-term goals under each mission goal and estimates of costs associated with implementation of the Strategic Plan. Strategic plans are developed to cover a 5-year period (1997-2002, 2001-2005). The strategic plan is results-oriented and is tied to the GMP.

Resource Management Plan (RMP, TRNP 1994)

Like the Statement for Management, the Resource Management Plan (RMP) describes TRNP's history and management goals. It also describes the present status of TRNP's resources, including natural and cultural resources. Management goals described in the RMP include:

- Manage TRNP as a natural badlands ecosystem and allow natural processes to continue.
- Consider the effects of all visitor and management activities on the natural and cultural resources and manage those activities to prevent adverse impacts on the resources integral to the mission of TRNP.
- Manage all natural and cultural resources in accordance with all applicable laws, NPS guidelines, and individual comprehensive management plans.

TRNP Baseline Conditions

The following sections describe the baseline conditions of various resources at TRNP. Where applicable, management and monitoring programs are also described.

Geology

Information on geological resources at TRNP is provided in the NPS's Northern Great Plains web site (NPS 2004a) and the NPS's Assessment of Air Quality and Air Pollutant Impacts in National Parks of the Rocky Mountains and Northern Great Plains (NPS 2004b). TRNP is located in the Missouri Plateau and North Dakota Badlands section of the Great Plains physiographic province. TRNP consists of rugged badlands characterized by a complex of dissected canyons that have been eroded over time by the Little Missouri River and other streams. A variety of resultant landforms were shaped, including buttes, ridges, and rolling hills. Badlands are composed of Paleocene deposits.

The badlands of North Dakota in the vicinity of TRNP contain various sedimentary materials, including surficial clays eroded by active stream channels and ephemeral streams. Sandstone, siltstone, and clays are mixed together with beds of lignite in an intricate arrangement of stratigraphic patterns and colors that are an important visual resource. A bright pink-to-purple "scoria" is a distinctive part of the landscape. This is a result of lignite strata having burned over time, baking the overlying clays. A few areas of the badlands contain fossils created from Paleocene forests and swamps that have been exposed by erosion of the surrounding geological strata.

The park is rich in paleontological resources. The North Dakota Geological Survey (NDGS) conducted a cooperative paleontological survey in TRNP from 1994 to 1996. More than two hundred fossil sites were identified and mapped from the rock layers known as the Sentinel Butte and Bullion Creek formations. The most common kind of fossil found was petrified wood, including large tree stumps measuring seven to eight feet in diameter. It is believed that most of these trees were conifers, such as cypress and sequoia. The fossilized remains of a four-foot reptile known as *Champsosaurus* were discovered. TRNP excavated this specimen from a hillside in the South Unit in October 1995 for exhibit in the visitor center. The sites documented by NDGS also include two other partial Champsosaur skeletons plus numerous freshwater mollusk remains, turtles (snapping and soft-shelled), parts of crocodile and alligator, as well as plant fossils.

Air Quality

A description of TRNP air resources is provided in the Exotic Plant Management Control EA (annotated draft) (NPS 2003a), the Theodore Roosevelt National Park Environmental Assessment Boundary Expansion Study (EEM 2002), and the NPS web page, Assessment of Air Quality and Air Pollution Impacts in National Parks (NPS 2004b). TRNP is designated as a Class I air quality area, providing for clean air, brilliantly clear day and night skies, and outstanding examples of a relatively unpolluted environment. Class I areas are national parks over 6,000 acres and national wilderness areas over 5,000 acres that were in existence on August 7, 1977. Only a small amount of new pollution is allowed in Class I areas.

There are no non-attainment areas in the Little Missouri airshed (Class II), which encompasses the Little Missouri National Grassland in North Dakota. A non-attainment area is any geographic region of the U.S. that the EPA has designated as not attaining the federal air quality standards for one or more air pollutants, such as ozone and carbon monoxide. Oil and gas leasing on the grassland and windblown dust are the two most likely sources of air pollutants in this area.

At TRNP, hundreds of small oil wells adjacent to the park emit both sulfur dioxide and hydrogen sulfide. While the emissions per well may not be large, the combined emissions of all the wells are substantial. Furthermore, some wells are very close to the park boundary where there could be acute impacts to vegetation on a local basis. Additional sulfur dioxide, nitrogen oxides, and volatile organic compounds are potentially transported from industrial and electric-utility facilities in Montana. The cumulative and acute effects of these point sources are the greatest concern at TRNP.

Visibility

Visibility at TRNP is excellent, with distant topography visible. Views of the Little Missouri River snaking through cottonwood-dominated bottomlands, cultivated benches, sparsely vegetated rolling hills, rounded buttes, and craggy badland formations are visible throughout the park (EEM 2002). The park allows people to enjoy panoramic vistas and a sense of solitude, inspiration, and timelessness similar to Theodore Roosevelt's experience in the Dakota Territory in the 1880s (NPS 2003a).

Water Quality

Descriptions of water resources for TRNP are summarized in the Baseline Water Quality Data Inventory and Analysis, Theodore Roosevelt National Park (NPS 1997), and the Theodore Roosevelt National Park Environmental Assessment Boundary Expansion Study (EEM 2002). Surface water resources in TRNP include the Little Missouri River, which winds through the park's South and North Units; numerous tributaries; intermittent streams; wetlands; and springs.

The Little Missouri River is the major surface water resource in TRNP, flowing through 8.7 miles of the South Unit and 13 miles of the North Unit, and forming the eastern boundary of the Elkhorn Unit. This free-flowing river is 560 miles long, drains an area of about 4,750 square miles, and generally flows northeast until it reaches the Missouri River at Lake Sakakawea.

The channel undergoes constant bed scour, a condition not expected given the relatively low gradient of the river (4.6 feet per mile). The bed scour is probably a result of the highly erodible bed material derived from the surrounding badlands. The volume of flow in the Little Missouri River system varies greatly, from as low as no discharge to as high as 65,000 cubic feet per second (cfs). Flow in the Little Missouri

River can cease completely in dry seasons, leaving only disconnected pools in the streambed. The remaining streams are mostly intermittent and have little or no summer flow.

Overall, water quality monitoring data from the EPA indicate that surface waters within the Little Missouri River surrounding TRNP have been impacted by human activities, including wastewater discharges, livestock grazing, and oil and gas activities (NPS 1997). From 1994 to 1996, eight parameters (turbidity, total coliform, fecal coliform, total sulfate, beryllium, copper, lead, and zinc) exceeded their standards more than 20 percent of the time. The presence of turbidity, sulfate, and several metals, which exceed criteria, are probably explained by runoff from soils and deposits associated with the surficial geology of the Little Missouri River basin. Agricultural practices, petroleum exploration, and production activities in the area exacerbate this problem. Energy development adjacent to the park could also affect water quality. Groundwater and streams could be contaminated by well blowouts, spills, or leakage of petroleum or saltwater.

The Little Missouri River has received special designations from both the NPS and the state of North Dakota. The 255-mile segment between Lake Sakakawea and Marmarth, North Dakota was nominated and listed on the Nationwide Rivers Inventory in 1982. The Nationwide Rivers Inventory noted that the scenic, recreational, geologic, fisheries, historic, and cultural values of this stretch of Little Missouri River are considered "Outstandingly Remarkable Values."

The Little Missouri River in North and South Dakota was one of 14 rivers in the entire prairie region classified as a free-flowing river of high quality with moderately high biological diversity. The State of North Dakota has designated the Little Missouri River as Class II, which means that beneficial uses can include aquatic life production, warm and cold-water fishing, domestic water supply, irrigation, livestock watering, and recreation. It has also been designated as the only state scenic river in North Dakota through the Little Missouri State Scenic River Act.

The Little Missouri State Scenic River Act expressly prohibits channeling, reservoir construction, or diversion other than for agricultural or recreational purposes, as well as the dredging of the river and its tributaries. Diking and riprapping for erosion control are permitted, while the construction of impoundments (dams) is prohibited. This river received the second highest resource ratings in a North Dakota Parks and Recreation Department evaluation of rivers throughout the state.

Seeps and springs occur in TRNP as well. The sources of water supplying the seeps may be local. Seeps may also outlet underground water that has traveled for long distances. Springs represent the most important source of water for wildlife in the backcountry of TRNP. There are 15 flowing wells and 10 developed springs at TRNP. Data collection for wells and springs has been limited for flow rate and chemical characteristics. There are additional springs and seeps that have not been inventoried. There is also little information about groundwater and water table characteristics. The USGS is currently developing a profile of groundwater quantities for the park.

Currently, TRNP obtains groundwater from two sources: (1) the Fox-Hills-lower Hell Creek Aquifer, and (2) the Tongue River Aquifer of the Fort Union Group, Upper Tertiary. Recharge to both of these aquifers is slow and is easily exceeded by the discharge from the aquifer, which occurs mainly in the form of withdrawal of water from wells. In fact, wells in both of these formations are decreasing in head, and eventually flow is anticipated to cease from some of them.

The primary groundwater concerns are salinity and contamination of the shallow alluvial aquifers from nitrates and pesticides. Fertilizer and pesticide leaching are primary threats to regional groundwater quality because of increased use over the last three decades. Underground injection wells associated with oil and gas production also have the potential to contaminate groundwater.

The Little Missouri River has a relatively large drainage basin. A large portion of Medora, including the park headquarters, the Medora visitor center, Maltese Cross cabin, and most of the park housing area are within the 100-year floodplain, as are the Cottonwood campground, the Peaceful Valley area, and the historic remnants in the Elkhorn Ranch Unit. The 100-year floodplain in the vicinity of the Elkhorn Ranch Unit ranges in width from 1,000 to 2,220 feet. The 500-year floodplain ranges from 1,200 to 2,300 feet wide.

TRNP has developed a water resource management plan to assist with water-related management decisions. Thirteen water resource management objectives are established in this plan. The plan provides guidance for development of a systematic water quality-monitoring program. This monitoring program, once developed would:

- Establish a physiochemical and biological baseline for TRNP's water resources;
- Develop and/or recommend potential rapid biological assessment techniques;
- Develop a bacteriological monitoring scheme;
- Review and cite literature necessary to support TRNP's rationale and/or recommendations;
- Determine the appropriate mix of regular fixed station monitoring stations versus the need for events-based monitoring.

TRNP does not currently have a baseline water quality-monitoring program; however, the Northern Great Plains Inventory and Monitoring Program is currently developing one for the park. The USGS also maintains gauging stations and collects surface water quality data near the South and North Units of TRNP. The stations with the longest-term records within TRNP boundary are: (1) Little Missouri River near Watford City, North Dakota (THRO 0006, with records from October 3, 1971 to March 18, 1996); and (2) Little Missouri River at Medora, North Dakota (THRO 0046, with records from November 3, 1949 to May 10, 1979). Water samples collected from these stations have historically been analyzed for a large number of analytes.

Soils

Soil resources for TRNP are quoted from the Theodore Roosevelt National Park Environmental Assessment Boundary Expansion Study (EEM 2002). Soils are predominantly clay- and loam-textured regosols and lithosols formed in a prairie environment in a hot, dry climate. Some soils in TRNP grade into haploborolls, with deep soil profiles mainly confined to range sites on lower prairie slopes (e.g., the Morton soil series), but are generally quite localized. Soils in the park developed from excessively drained, medium-textured, calcareous parent material. Soil texture generally ranges from loams to clay loams. Surface runoff is rapid on the steep slopes and water infiltration is limited. Erosion causes loss of the organic component almost as soon as it forms. Saturated soils in this region tend to be highly erodible and can cause considerable slumping from the shoulder slope and backslope of existing landforms.

The badlands are not classified as a soil, but rather as outcrop slopes without soil development. Despite the lack of organic matter and soil structure, sparse vegetation is found on all but the most unstable slopes and strata. Even on the unstable slopes, microtopography can support the establishment of plants. At the other extreme, under the conditions of greatest local soil development, soils grade into haploborolls (chernozems) with deep profiles, such as the Morton soil series. They are localized and mainly confined to overflow range sites on lower prairie slopes. The Badlands-Bainville Association is the predominant soil association. The Bainville soil series consists of excessively drained, medium-textured soils developed from calcareous weathered materials found on prairie ridgetops and steep upper slopes. The Havre soil series has an alluvial origin and is common in valley bottomlands. The Patent soil series represents recently deposited local sediments on colluvial fans. Both of these series are fine-textured and often have a claypan subsoil and buildup of salts. The sandy Banks soil series is much more restricted and

represents recent alluvial deposits. This series is found on bottomlands along the present-day Little Missouri River. Much of the bottomlands are made up of alluvial and colluvial soils in these three soil series. The Flasher soil series is made up of coarse, sandy soils on steep side slopes and crests of sandstone-capped ridges. The coarse gravel Parshall (Cheyenne) soil series is found on the high-terrace remnants of the ancestral Little Missouri River, such as the Petrified Forest Plateau. Both of these series support prairie vegetation on flat and gentle slopes.

Vegetation

Information describing the plant communities at TRNP is provided in the Northern Great Plains web site (NPS 2004b), TRNP's Exotic Plant Management Control EA (NPS 2003a), and the Theodore Roosevelt National Park Environmental Assessment Boundary Expansion Study (EEM 2002). Vegetation in TRNP includes 574 species of vascular plants, most of which are adapted to a semi-arid climate. Eighty-two species of vascular plants are non-native. At least 109 different species of bryophytes and 208 species of lichens have also been identified in TRNP.

TRNP is located within the mixed-grass prairie region of the Northern Great Plains. Native prairie grasses and forbs dominate the vegetation on the gently rolling uplands and plateaus. The rough topography, coupled with a variety of soils, resulted in the formation of several different plant communities. Dry shrub communities characterize upland draws with southern exposures. Hardwood trees dominate northern exposure draws and juniper stands. Floodplains support cottonwood forest, with dense stands of low-growing willow in some areas.

Two types of grasslands occur in the upland portions of TRNP. Upland grasslands are found on deep, well-drained soils on moderate to shallow slopes. Dominant grassland species include wheat grasses, needle grasses, and gramas with many other grass and forb species present. Winter fat and fringed sage are also present on upland grasslands. Dry breaks are found on areas of highly eroded silts or scoria surfaces. They are dominated by sparse stands of little bluestem, gramas, red threeawn, and scattered shrubs such as juniper, saltbush, and greasewood.

Wooded draws are found in concavities in the landscape where soil moisture tends to be higher and where surface and subsurface water movement is greater. Wooded draws are dominated by Rocky Mountain juniper, green ash, boxelder, and chokecherry. The understory is dominated by western snowberry, skunkbush sumac, and a variety of grasses, forbs, mosses, and lichens.

Sagebrush and grassland bottoms are formed by alluvial deposits from the Little Missouri River and its larger tributaries, and comprise the higher floodplains and river terraces. They are dominated by silver sagebrush (*Artemisia cana*), western wheatgrass, needle-and-thread, and blue grama. Fringed sage, prairie rose, and western snowberry occur as additional woody components.

Floodplain forests are found on the lowest terrace along perennial streams. They are dominated by plains cottonwood, with subdominants Rocky Mountain juniper, green ash, chokecherry, wild rye, wheatgrasses, and sedges. Grasses and forbs may replace the woody understory in some locations. Riparian vegetation occurs in a narrow strip between floodplain forest and perennial streams. The dominant vegetation is normally various species of willow, with wildrye, prairie cordgrass, and rushes in the understory.

Plains cottonwood and peachleaf willow woodlands dominate the riparian corridor of the Little Missouri River. The presence of sandbar willow in the understory of these woodlands illustrates the mesic nature of the habitat. Additional species of shrubs common to these mesic riparian corridors include red-osier dogwood, buffalo currant, honeysuckle, western snowberry, Wood's rose, and skunkbush sumac.

Wetlands, apart from woody floodplains, are limited. Those that do occur are shrub-scrub and herbaceous wetlands. Shrub-scrub wetlands found in TRNP and the surrounding lands are dominated by sandbar willow. Emergent wetlands are dominated by the prairie cordgrass temporarily flooded herbaceous alliance. This alliance is dominated by prairie cordgrass, while foxtail barley and western wheatgrass are the most common secondary species. Small wetlands occur around seeps and springs. More extensive wetlands occur within large depressions, within and along perennial drainages, and around livestock ponds and small water storage reservoirs. These emergent wetlands are typically dominated by spikerush, arctic rush, cattails, and foxtail barley.

Although TRNP does not have a specific monitoring program for vegetation, it is in the process of developing a plant monitoring protocol as part of the Northern Great Plains Inventory and Monitoring Program. The purpose of the protocol will be to monitor vegetation as an indicator of overall ecosystem health.

In 1997 and 1998, the NPS mapped vegetation in the park using National Vegetation Classification Standards. A total of 35 vegetation types were identified. Six vegetation types are considered globally vulnerable or of special concern. Globally vulnerable vegetation types include green ash - elm woody draw, prairie sandreed - sedge prairie, skunkbush sumac - thread-leaved sedge shrub prairie, prairie cordgrass - sedge meadow, and common rabbitbrush - bluebunch wheatgrass shrubland. The eastern cottonwood - Rocky Mountain juniper floodplain woodland is of special concern. This community has only been identified in southwestern North Dakota, and there are probably fewer than 20 occurrences of this community range wide (USGS and NPS 2004). TRNP is not home to any threatened or endangered plant species. Five species listed on the North Dakota rare plant list occur within TRNP.

Eighty-two exotic (non-native) plants have been identified at TRNP. Until the 1990s, management of exotic plants at TRNP was sporadic. In 2002, the Northern Great Plains Exotic Plant Management Team was established to supplement exotic plant control efforts in a network of 14 parks, including TRNP. The team, headquartered at TRNP, works closely with park staff to treat exotic species in high priority areas. TRNP has also entered into cooperative agreements with several agencies, such as the Biological Resources Division (BRD) of the U.S. Geological Survey (USGS), to address exotic plant management issues, and with the National Aeronautics and Space Administration (NASA) to test remote sensing techniques for mapping infestations. Current management of exotic plants focuses on species identified on the North Dakota Noxious Weed List. No treated areas are being re-seeded. Current management is defined as a "limited integrated approach" because not all potential tools are used. In general, most actions are limited in scope and effect. Each species is treated on a case-by-case basis using chemical, mechanical, manual, or biological control methods. Exotic plant infestations are mapped and treatment areas are monitored to determine the overall success of exotic plant management treatments.

Under the current Fire Management Plan, management-ignited fire is used to simulate wildfire's historic role in the ecosystem and to enhance the growth of native plant species while retarding the propagation of exotic species.

Terrestrial Wildlife

Terrestrial wildlife resources are described in the Theodore Roosevelt National Park Environmental Assessment Boundary Expansion Study (EEM 2002). Mammals that occur in TRNP include carnivores, ungulates, and small mammals. Coyote, long-tailed weasel, mink, and badger are common carnivorous mammals that occur. Red fox, bobcat, and mountain lion have been observed in the park. Ungulates include white-tailed deer, mule deer, and pronghorn. Elk occur in the South Unit while bighorn sheep range through the North Unit.

TRNP maintains a population of feral horses in the South Unit as a historic demonstration herd. Small mammals include the least chipmunk, beaver, western harvest mouse, prairie vole, desert cottontail, Merriam's shrew, and black-tailed prairie dog. Species of bats known to occur include little brown bat, big brown bat, and hoary bat.

Birds at TRNP include raptors, waterfowl, wading birds, shorebirds, upland game birds, and migrants. Raptors include red-tailed hawk, American kestrel, northern harrier, and great horned owl. Bald eagles have been observed in the area, while golden eagles nest in the park.

Mallard and blue-winged teal are the most common waterfowl species. Great blue heron is the most common wading bird. Upland sandpiper and killdeer are common shorebirds. The non-native ring-necked pheasant and native sharp-tailed grouse are common upland game birds. Other birds commonly observed at TRNP include hairy woodpecker, northern flicker, black-billed magpie, chipping sparrow, vesper sparrow, black-capped chickadee, dark-eyed junco, field sparrow, lazuli bunting, western meadowlark, cliff swallow, red-eyed vireo, yellow warbler, rock wren, and American goldfinch.

North Dakota does not support a diverse array of reptile and amphibian species. The semi-arid climate provides only marginal conditions for amphibian breeding and hibernation, while the low winter temperatures and the short growing season appear to be primary limiting factors for reptiles. Reptiles include the common snapping turtle, painted turtle, sagebrush lizard, short-horned (horned) lizard, western plains garter snake, plains hognose snake, bullsnake, and prairie rattlesnake. Amphibians include tiger salamander, plains spadefoot toad, Great Plains toad, boreal frog, and leopard frog. Although these amphibian species occur at TRNP, they are infrequently found and are local.

TRNP does not currently have a wildlife management plan; however, TRNP does have an active program to manage bison and feral horses in addition to elk. In 1956, 29 bison were reintroduced into the South Unit. Resource managers have used a forage allocation model to estimate that the South Unit can support between 200 to 500 bison. Although no plan is formally in place for bison management, TRNP has conducted bison roundups nearly every year since 1962. Bison are rounded up, tested for selected diseases, and transported to recipients such as the Three Affiliated Tribes of Fort Berthold Reservation. During culling operations, attempts are made to adjust bison populations to within 200 to 300 bison.

Seventeen permanent range transects have been established to monitor native plant communities. Transect sites were established based on frequency of bison use. These sites are monitored every three years to detect changes in native plant species composition, bare ground, and litter.

No plans are formally in place for management of feral horses in TRNP. Based on the forage allocation model, TRNP has set a population objective of 50 to 90 horses in the South Unit. In 2004, the horse population in the South Unit was estimated at approximately 75 animals. Culling strategies for feral horses are to reduce the number of horses to approximately 60 animals and to maintain a sex ratio of 60 percent females to 40 percent males. Culling strategies also include maintaining age ratios and the social structure of individual bands. Feral horse roundups have been used to actively manage these herds to satisfy park and herd objectives. Activities associated with management of feral horses include vegetation monitoring, population monitoring, disease monitoring, and regular herd reductions. Herd reductions are primarily conducted to minimize effects to plant communities in TRNP and to maintain park populations at levels that coincide with forage allocations for all ungulate species.

Aquatic Wildlife

A description of TRNP's aquatic resources is provided in the Theodore Roosevelt National Park Environmental Assessment Boundary Expansion Study (EEM 2002). There are approximately 25 species

of fish in the Little Missouri River within the park. Some of the more abundant native fish species include long-nose sucker, pearl dace, finescale dace, white sucker, creek chub, sand shiner, bigmouth shiner, red shiner, shorthead redhorse, fathead minnow, stonecat, black bullhead, and channel catfish.

Recreational fisheries in the region are limited to portions of the Little Missouri River where there are channel catfish and where ponds or reservoirs support largemouth bass, bluegill, yellow perch, and bullhead. The Little Missouri River supports populations of several gamefish, including northern pike, walleye, sauger, and channel catfish. The silvery minnow and the plains minnow represent about 80 percent of the number of fish in the river as a whole.

Threatened, Endangered and Candidate Species

Table 3-1 summarizes the list of federally listed threatened, endangered, and candidate species that may be present or have habitat in TRNP.

TABLE 3-1 FEDERALLY LISTED AND CANDIDATE SPECIES PRESENT OR POTENTIALLY PRESENT AT TRNP

Common Name	Scientific Name	Status	Occurrence
Birds			
Bald eagle	*Haliaeetus leucocephalus*	Threatened	Documented occurrence
Whooping crane	*Grus americana*	Endangered	Potential occurrence
Interior least tern	*Sterna antillarum athallasos*	Endangered	Potential occurrence
Piping plover	*Charadrius melodus*	Threatened	Potential Occurrence
Yellow-billed cuckoo	*Coccyzus americanus*	Candidate	Documented Occurrence
Mammals			
Black-footed ferret	*Mustela nigripes*	Endangered	Potential Occurrence
Gray wolf	*Canis lupus*	Threatened	Potential Occurrence
Fish			
Pallid sturgeon	*Scaphirhynchus albus*	Endangered	Potential Occurrence
Invertebrates			
Dakota skipper	*Hesperia dacotae*	Candidate	Potential Occurrence

No species proposed for listing were identified within the TRNP.

Wilderness

Lands designated as wilderness in TRNP encompass nearly 42 percent of the park's 70,447 acres. In 1978 (Public Law 95-625, National Parks and Recreation Act of 1978), the U.S. Congress designated 29,920 acres as wilderness, providing the only primitive experience in western North Dakota. The wilderness is divided into two sections, the South Unit with 10,510 acres, and the North Unit with 19,410 acres. Most of these areas are west of the Little Missouri River in the North Dakota badlands.

TRNP does not currently have a Wilderness Management Plan and Environmental Assessment. However, TRNP must apply the 'minimum requirement' concept to all management activities that affect the wilderness resource and character. Minimum Requirement is a documented process the NPS uses to determine the appropriateness of all actions affecting wilderness. This concept is intended to minimize impacts on wilderness values and resources. Managers may authorize (using a documented process) the generally prohibited activities or uses listed in Section 4(c) of the Wilderness Act if they are deemed necessary to meet the minimum requirements for the administration of the area as wilderness and where those methods are determined to be the 'minimum tool' for the project.

Visitor Use and Experience

TRNP affords individuals the opportunity to experience the badlands environment and to understand and enjoy it as Roosevelt once did. A significant park experience is created by the interplay of natural forces including weather, vegetation, wildlife, vistas, smells, color and shape of landform, air quality, varied light, and seasons. Geological forces continue to create spectacular examples of badlands and provide opportunities for visual interpretation of the erosion processes.

TRNP visitation numbers were 478,130 in 2002 and 496,872 in 2003. June, July, and August are the busiest months. Viewing wildlife and scenic vistas are the most common visitor activities in TRNP. Other popular activities include visiting the museum, horseback riding, camping, and participating in interpretive programs. Visitors to TRNP may also travel to several other attractions nearby, including Medora, Lake Sakakawea, Fort Union Trading Post National Historic Site, and Knife River Indian Villages National Historic Site. The Little Missouri National Grassland (managed by the USFS), which borders all units of TRNP, is the largest national grassland in the country. It contains rugged badlands topography, which attracts tourists. The river provides scenic canoeing opportunities in the spring when water flows are sufficient. In the winter, snowmobiling occurs on the river.

The Medora Visitor Center is located at the entrance of TRNP and has a museum, theater, and information desk. The visitor center is open daily except Thanksgiving, Christmas, and New Year's Day. The staff provides information about road and trail conditions, park activities, park operations, and management programs. The museum has personal items of Theodore Roosevelt, ranching artifacts and natural history displays. Roosevelt's Maltese Cross Cabin is located behind the visitor center and is open for tours. Ranger talks, movies, hikes, campfire programs, and other interpretive programs also take place at the visitor center and out in TRNP. A major feature of the South Unit is a paved, 36-mile, scenic loop road with interpretive signs that explain some of TRNP's historical and natural features. The "Road Log Guide" book explains more about TRNP's resources. The TRNP webpage also provides information about resources and current management programs within TRNP.

Cultural Resources

Theodore Roosevelt National Park contains a wide range of cultural resources that complement the natural resources and contribute to the significance of the park. These cultural resources span almost 11,000 years. The park contains 15 historic structures that are included on the List of Classified Structures (LCS). Three buildings have also been placed on the National Register of Historic Places (NR) with other facilities pending nomination to the NR.

Much of the archeological evidence within TRNP was documented by David D. Kuehn in his report "The Archeology of TRNP North Dakota: Final Results of the 1987-1989 University of North Dakota Investigations." This archeological investigation included the intensive cultural resource inventory of surface finds on 46 individual tracts of land, corresponding to existing and/or anticipated park development. Together the 46 tracts totaled approximately 17,000 acres, or roughly one-fourth of the

total TRNP land area. This survey resulted in 269 recorded cultural resource sites, of which 214 are prehistoric or historic American Indian, 61 are historic Anglo-American, and 6 that are both historic and prehistoric. A professional large-scale survey was also conducted by the State of North Dakota in the late 1960s. Additional documentation connected with project clearance-related surveys plus individual discoveries have also recorded cultural resource sites. Collectively, the investigations illustrate the long and rich diversity of the archeological history within TRNP.

Named cultural units associated with the American Indian sites were culturally or temporally classified from surface visible diagnostic artifacts and datable materials.

Archeological evidence of Paleo-Indian occupation of TRNP is limited to a single Plano tradition (10,900 to 7,500 years before present [BP]) Agate Basin projectile point found on the surface. Material dating to this period has been documented in the state, but it is relatively rare.

The Archaic period (7,500 to 2,100 BP) follows the Paleo-Indian period. There are several Archaic sites near the park. The McKean Complex (5,000 to 3,000 BP) of the Archaic period is well represented in the northern plains and TRNP. Materials from the McKean Complex have been identified in surface contexts at ten sites within the park. The Pelican Lake Complex (3,000 to 2,100 BP) follows the McKean Complex and is represented at six locations in the park in association with other materials.

The Plains Woodland tradition follows the Archaic period. It is roughly dated between 2,100 BP and 1,200 BP. Several sites with Plains Woodland components have been recorded in the Little Missouri River Grasslands.

Two prehistoric periods span into the historic period. The Plains Village tradition became apparent in approximately 800 BP and was concentrated on the Missouri River. Procurement sites and camps of this period have been recorded in the area. The Equestrian Nomadic period began in 250 BP with the introduction of horses. No definite sites of this period have been recorded in the area surrounding TRNP; however possible components and historic period trade items have been found in isolated contexts. Apparent NR eligible prehistoric sites include probable base camps, large cultural material scatters, a bison processing area/kill site, a small rock shelter, and a series of four conical timbered lodges.

The Historic period, which began approximately 300 years ago, is well represented, both in and outside TRNP. Historic Anglo-American sites from the settlement period (ca. A.D. 1875 – 1933) and the CCC/TRNP period (A.D. 1933 – present) are well documented in TRNP with at least 61 sites. These sites include homesteads, dug-outs, depressions, graffiti and rock-art, CCC improvements, CCC camps, cultural material scatters, and spring/well developments. They contain a great deal of inherent information about historic period life and response to the changing economic conditions of the late 19th and early 20th centuries. A total of 15 of the structures from this period are on the List of Classified Structures (11 from the CCC era, 3 from the ranching period, and Theodore Roosevelt's Maltese Cross Cabin).

Theodore Roosevelt's association with the Little Missouri Badlands in the 1880s-1890s is well recorded. The Maltese Cross Cabin, originally built seven miles south of Medora during the winter of 1883-1884, is now located next to the Medora Visitor Center at the entrance to the South Unit. The Elkhorn Ranch Unit of TRNP is the location of Roosevelt's Elkhorn Ranch House that was constructed the following year. Only foundation blocks remain of the Ranch House but the site has been determined eligible for the NR.

The three buildings at Peaceful Valley Ranch in the South Unit, which have been placed on the NR, have historical and architectural significance. The main ranch house (about 1885), the barn (1905), and the bunk house (1920) are remnants of the entire history of Euro American settlement in western North

Dakota including open range ranching, homestead ranching, and dude ranching. The buildings also played a role in the areas development and transformation into a unit of the National Park System with a link to the CCC operation and were part of the first headquarters complex for what was to become TRNP.

Emergency Relief Administration Act projects are prominent in both the North and South Units. These Federal relief programs included the CCC, Works Progress Administration (WPA), and Emergency Relief Administration (ERA). Work completed by these programs including roads, picnic shelters and campgrounds, all of which provided the groundwork for the establishment of Theodore Roosevelt National Memorial Park, which later became TRNP. Structures include the South Unit Scenic Drive section of road from Mile 7 to Mile 13, 38 historic stone culvert headwalls and retaining walls along this route, the East Entrance Station, and the pylon at the Painted Canyon Overlook. CCC related structures in the North Unit include two picnic shelters near Juniper campground, the River Bend Overlook shelter, and the Camptender's Cabin.

American Indian Concerns

Ethnographic resources are identified by groups that have an ancestral association with a given area. The Three Affiliated Tribes (Mandan, Hidatsa, Arikara), Standing Rock Lakota Sioux Tribe, Fort Peck Assiniboine and Sioux Tribes, and Gros Ventre are culturally linked to the region.

Social and Economic Conditions

Social and economic resources are taken directly from the Theodore Roosevelt National Park Environmental Assessment Boundary Expansion Study (EEM 2002). The park is the most popular visitor attraction in North Dakota and provides significant economic and employment benefits for the state and region. McKenzie County encompasses about 2,735-square miles, with a population of 5,737 in 2000. McKenzie County's population decreased by 10.1 percent from 1990 to 2000. Watford City is the county seat and home to approximately 25 percent of county residents. Billings County's 2000 population was 888, a 19.9 percent decrease from 1990. Medora, the Billings County seat, has a population of 100 individuals.

Full- and part-time employment totaled 3,800 and 803 jobs in McKenzie and Billings Counties, respectively, in 1999. This is a marked reduction from 1979 employment totals. Unemployment in the region in 1999 was 4.4 percent in McKenzie County, and 5 percent in Billings County. These figures compare with the statewide figure of 3.4 percent for North Dakota.

Agriculture accounts for 24.1 percent of employment in McKenzie County. Mining and petroleum are the leading industries in the county, accounting for 57.5 percent of employment. The government employs 12.1 percent of the county work force. Services and trade are other significant employers in the county. Agricultural professions account for approximately 37 percent of employment in Billings County. Mining, manufacturing, trade, services, and the government are the principal non-farm employers, with government agencies employing 128 individuals in 1999.

The livestock industry is an important component of agricultural activity in McKenzie and Billings Counties. According to the Northern Great Plains Management Plan produced by the USFS, cattle are by far the most prevalent type of livestock grazed on National Forest System lands on the northern Great Plains. Rangeland forage is a major food source for cattle and sheep. Livestock production from USFS lands on the northern Great Plains is very important to the people who hold grazing permits. The Medora Grazing Association has a comprehensive grazing permit with the USFS for the area surrounding the park. The grazing association, in turn, issues permits to various individual ranchers for specific parcels. Fees are charged per AUM. The costs are passed from the Medora Grazing Association to the individual

permittees. In 2001, the federal government charged $1.35 per AUM and the grazing association added $0.92. Therefore, a rancher paid $2.37 per AUM. After the grazing association collects its fees, 67.5 cents of the total goes to the federal treasury. The 20-year permitted AUM levels (average) in the entire Little Missouri National Grassland are 315,900.

Oil and gas production in North Dakota ranks ninth in the nation. In 1998, Bowman, Billings, McKenzie, and Williams Counties led in production, with most production occurring on USFS lands in Billings and McKenzie Counties. Currently, there are approximately 600 federally permitted wells in the Little Missouri National Grassland, including producing oil and gas wells, saltwater injection wells (used for reinjecting produced formation waters into subsurface formations), and shut-in wells (completed, but not producing). A well may be shut-in for tests, repairs, to await construction of gathering lines, or to await better economic conditions. Plugged and abandoned wells are not included in this count. There are approximately 100 additional wells on lands where there is federal surface ownership and nonfederal minerals.

The vitality of the oil and gas industry in the Dakota grasslands is evident in the fact that the region accounts for 27 percent of state oil production and employs nearly 1,000 individuals. The industry also contributes approximately $15 million per year in taxes. About one-fourth of the tax revenue is returned to McKenzie, Billings, Golden Valley, and Slope Counties for schools and roads. USFS- and BLM-administered public land in the Little Missouri provided an additional $4.5 million, with half of that returned to the state of North Dakota. Oil and gas management within this basin has a direct and immediate effect on the regional oil and gas industry.

Between 1969 and 1999, total annual personal income growth was well below the national and state averages: 5.7 percent in McKenzie County and 4.9 percent in Billings County. This compares with 7.1 percent for the state and 8.0 percent for the United States. Below-average growth in personal income is compounded by above-average local poverty levels.

According to the U.S. Census Bureau, 11.9 percent of the nation's population lived in poverty in 1998. During the same year, North Dakota's poverty level was slightly above the national average (12.7 percent). The poverty level in McKenzie and Billings Counties was above the national and state averages at 16 percent and 20.8 percent, respectively. Per capita personal incomes in the region lag far behind state and national averages. Per capita personal income (1999) averaged $19,955 in McKenzie County and $14,166 in Billings County. This compares with a national average of $28,546.

History of Elk Management

This section outline highlights the history of elk in the North Dakota badlands and TRNP's reintroduction and management of elk. **Attachment A** includes a complete chronology of the reintroduction and management of Theodore Roosevelt National Park's elk population.

Late 1800s – Elk were extirpated from the Badlands.

April 25, 1947 – Theodore Roosevelt National Memorial Park was established, later renamed Theodore Roosevelt National Park (TRNP).

August 13, 1984 – The TRNP Elk Management Plan and Environmental Assessment (EA) for the elk reintroduction was released for public comment.

January 9, 1985 – The Finding of No Significant Impact (FONSI) statement was issued by TRNP and approved by the Regional Director.

January 28, 1985 – A Memorandum of Understanding (MOU) was signed among NDGF, USFS, and TRNP to manage elk in and around the park.

March 13, 1985 – Forty-seven elk (8 bulls, 39 cows) from the Wind Cave National Park (WICA) were released into South Unit of TRNP. These elk were captured during the January roundup in WICA.

September 24, 1990 – A letter from the Regional Office was sent to NDGF stating that reintroduction of elk was a success. This letter also noted depredation problems outside TRNP and the development of a regional elk management plan by the NDGF.

January 11, 1993 – The TRNP conducted a roundup with intentions of transferring elk to two zoos and Sully's Hill National Game Preserve in North Dakota, and the Cheyenne River and Pine Ridge Reservations in South Dakota. A pre-roundup census estimated 400 elk. Of the 278 captured elk, 44 were killed for disease testing or died during capture, 176 were shipped, and 51 were returned to TRNP. A post-roundup census estimated 130 elk in TRNP.

October 10, 1993 – A Forage Allocation Model for Four Ungulate Species was submitted by MSU (Westfall et al., 1993). Based on that model, TRNP established an elk population management objective of 360 elk, depending on numbers of bison and horses.

October 28, 1993 – NDGF, USFS, and TRNP renewed the MOU to manage elk in and around the park.

August 15–31, 1997 – NDGF authorized the first hunting season for elk outside TRNP boundaries. One hunting unit was established with a split season. The depredation hunt issued 36 sportsman permits and 17 landowner permits. Thirty-seven bulls were harvested.

August 1998 – NDGF allowed another short season for elk hunting outside TRNP. Forty sportsman and 18 landowner licenses were issued for this elk unit. Three cows and 34 bulls were harvested.

August 1999 – NDGF established two hunting units. Fourteen tags were issued for E3 (two landowner and 12 regular - all any elk). The hunting season for E3 was from August 13 to 29. Eight bulls were harvested. For unit E4, there were 58 licenses issued (18 landowner and 40 sportsman). Early season was August 13 to 29, and late season was August 20 to 29. Twenty bulls and 16 cows were harvested.

January 18–28, 2000 – The second elk reduction occurred in TRNP. The 2000 Roundup lasted 11 days. Initial processing took 4 days (January 18 to 21) to process 297 elk. On the 25th, 27th, and 28th 198 elk were shipped - 144 to Kentucky, 8 to Dakota Zoo, 3 to Roosevelt Zoo, 3 to Sully's Hill, and 40 to Three Affiliated Tribes. A total of five deaths occurred during this roundup. A total of 94 were released back into TRNP (50 with radio collars). Cost of roundup was $40,000. A post-roundup census indicated 200 elk in TRNP.

August 2000 – Hunting units included E3, E4 (early), and E4 (late). There were two landowner tags available in E3 and 17 available in E4 (landowners were not restricted to an early or late season). There were 12, 16, and 24 tags available for sportsman in E3, E4 (early) and E4 (late), respectively. Twenty-four elk were harvested (14 bulls, 10 cows).

August 2001 – There were 25 elk harvested (13 bulls ands 12 cows) in unit E4.

2001–2003 – NPS, Rocky Mountain Elk Foundation, and University of North Dakota formed a partnership to finance and implement a 3-year monitoring study to track and monitor elk habitat and movement. USGS/BRD Northern Prairie Wildlife Research Center received approval to implement a

companion study to research the population ecology of TRNP herd. This study was never completed but served as the catalyst for future collaborative research between NPS, USGS/BRD, and NDGF.

July 2002 – Because of concerns regarding CWD, a memo was issued by the NPS Director restricting movement of cervids to or from NPS units without a 99 percent confidence that the prevalence of CWD was less than 1 percent.

August 2002 - Elk hunt in hunting units E4 and E3 commenced on August 9. There were 50 sportsman and 15 landowner tags available in E4. There were nine bulls and 10 cows harvested in E4.

January 2003 – Due to the NPS CWD policy issued in July 2002, a roundup scheduled to remove approximately 250 elk from the South Unit of TRNP was cancelled. This roundup would have reduced the elk population to approximately 200 animals.

January 2003 – NPS and USGS initiated an elk movement and distribution study using global positioning system (GPS) technology to track 30 adult female elk fitted with radio collars.

Spring 2003 – NDGF, USFS, and TRNP renewed the MOU to manage elk in and around the park.

August 2003 – Elk hunt in hunting units E4 and E3 commenced on August 8. There were 50 sportsman and 15 landowner tags available in E4. There were 12 bulls and seven cows harvested in E4.

May 6, 2004 – USFS agrees to be a cooperating agency for project.

Elk Research

Starting in 2000, the NPS and USGS began studying the elk population at TRNP. To date, elk research projects at TRNP have focused on three primary areas of interest:

1. Survey methods – "developing methods for counting elk accurately" by evaluating the potential for monitoring elk populations via sighting-rate and mark-resight models for fixed-wing aircraft.
2. Population processes/dynamics – "determine those factors that influence elk" by estimating vital rates and developing population projection models.
3. Movement and distribution – documenting and modeling the movements and distribution of elk that winter within TRNP.

The following preliminary research findings, which are not peer-reviewed and are subject to revision, were provided by Sargeant and Oehler (Sargeant and Oehler 2004, unpublished data) from studies conducted from 2000 to 2004:

- The pregnancy rates for adult female elk (2 years or older) and the pregnancy rates for subadults (1 to 2 years old) are above 90% and 50% respectively.
- The annual survival rate for calves is greater than 90%. The survival rate for female elk is greater than 95%.
- Hunting outside TRNP is the primary cause of mortality for adult elk; however, harvests each year tend to be low (less than 35 elk per year). Seven cow elk were harvested in 2003.

- Preliminary projections based on pregnancy and survival rates suggest a population growth rate of 20% to 25% annually.

- Aerial surveys indicate a growth rate of approximately 20%. In 2001, 293 elk were estimated within TRNP. By 2004, 503 elk were estimated within TRNP.

- At current rates of population growth, the elk population doubles every 3 to 4 years. Growth rates would probably not increase in response to removals, nor would they decrease with increasing numbers of elk.

- Removing 20% to 25% of cow elk annually can stabilize the population. This estimate is based on a "blanket reduction" where no specific age classes are targeted for removal. Control through contraception would require treatment of a larger proportion of the population.

Research on elk movement and distribution was initiated in 2003 and is ongoing. Twenty-nine elk were marked with global positioning collars in 2003 and 41 elk were marked in 2004. As of June of 2004, 80 to 82 elk are marked (GPS and VHS collars). In 2003, 22,876 locations were recorded at 7-hour intervals, and 31,887 locations were recorded at 15-minute intervals. Preliminary results indicate:

- Although elk traverse TRNP's boundary, elk activity in the vicinity of the South Unit is concentrated disproportionately within TRNP.

- The majority of the population spends most of its time within TRNP.

- Population control efforts would probably not succeed unless they target elk within TRNP.

Other notable trends include:

- Few collared elk are using areas outside TRNP (for example, in 2003 three collared elk used an area northwest of TRNP and one collared elk used an area to the south). Elk observed leaving the park in spring have all returned in the fall.

- Annual elk movement dynamics are not well understood.

- There are typically few animals available outside TRNP for hunters in August (the current hunting season). There is speculation that some elk may move back into TRNP "when shots are heard."

A preliminary bibliography of relevant publications has been prepared and is included in **Appendix B**. This bibliography includes relevant sources of information pertaining to management of elk.

Vegetation Research

There are currently two studies at TRNP that are designed to help evaluate the effects of elk on vegetation. TRNP and USGS are studying the effects of herbivory near natural and improved springs. TRNP and USGS are also conducting a dietary study to learn more about elk diets both within and outside TRNP. These studies may help to identify which plant species to monitor. As part of the diet study, the nutrient quality of various plant species is also being evaluated.

TRNP is currently not monitoring the effects of elk on vegetation and other resources. Previous vegetation studies did not have the sensitivity to detect changes relative to changes in ungulate populations. Research conducted by Montana State University (Irby et al. 2002) sampled 17 transects for a forage allocation model. The results indicated that this study did not have enough level of resolution to detect changes in vegetation as a result of herbivory by ungulates.

4.0 PURPOSE OF AND NEED FOR ELK MANAGEMENT

The NPS seeks to identify appropriate methods for elk management in TRNP. An approved elk management plan and associated NEPA analysis would resolve current issues and concerns regarding elk within and beyond TRNP. The elk management plan and associated environmental impact statement (EIS) will be guided by NPS and TRNP policies, NEPA, and other related requirements. The plan will also address concerns expressed by the other federal and state agencies, as well as the public.

During the internal scoping meeting, the meeting attendees coordinated to form clear statements describing purpose, need, and objectives. The following sections present the foundation and final statements of purpose, need, and objectives.

Purpose

Director's Order (DO)-12, Conservation Planning, Environmental Impact Analysis, and Decision Making describes "purpose" as a statement of goals and objectives that the NPS intends to fulfill by taking action. In light of this definition, the following purpose statement was developed at the internal scoping meeting:

> The purpose of this plan/EIS is to identify a range of elk management strategies that are compatible with long-term protection of park resources and natural ecosystems and processes.

Needs

Under DO-12, "need" is described as an existing condition that should be changed, problems that should be remedied, decisions that should be made, and policies or mandates that should be implemented. In light of this definition, the following need statement was developed for this project:

> As a result of past and current actions within and beyond TRNP, several conditions have influenced the TRNP elk population. These conditions include the absence of elk predators in TRNP, ineffectiveness of public hunting outside of TRNP in controlling population size within TRNP, high annual natural population growth rates despite high population density, lack of elk mortality such as winter kill, high reproductive and survival rates, and the discontinuation of translocating elk from TRNP. As a result of these conditions, elk could affect:
>
> - other herbivores by competing for vegetation;
> - plant communities by trampling vegetation, spreading non-native plants, and overgrazing;
> - land uses and users outside TRNP, including livestock grazing, hunting, and agriculture, and
> - water quality.
>
> An elk management plan is needed:
>
> - because population growth rates are very high and unchecked;
> - because too many elk may adversely affect other resources;
> - because management tools used previously are no longer available;

- because, under NPS policy, TRNP is obligated to maintain or restore natural resource conditions and processes;
- to consider the needs of adjacent landowners and other land managers;
- because TRNP has a responsibility to regulate the elk population as outlined in agreements with the USFS and NDGF; and
- to reevaluate current objectives and management options.

Objectives in Taking Action

Objectives are "what must be achieved to a large degree for the action to be considered a success" (DO-12). Objectives for managing elk populations must be grounded in the enabling legislation, purpose, significance, and mission goals of TRNP, and be compatible with direction and guidance provided by the general management plan. The following elk management objectives were developed during the internal scoping meeting:

Policy

- Be consistent with NPS policies and mandates (including policy on translocation of elk), and TRNP enabling legislation.

Resources Management

- Prevent major, adverse impacts to physical and biological components of TRNP and surrounding environments.

Management

- Establish action indicators to guide management of elk.
- Minimize the scope and frequency of manipulating the elk population in TRNP, while maintaining long-term elk population viability.
- Identify specific management objectives for elk in TRNP.
- Incorporate flexibility for management strategies to be modified as information is obtained regarding wildlife disease (for example CWD) or other factors influencing elk demographics.

Visitor Experience and Public Interest

- Engender public support, education, and appreciation of the complexity of managing elk within TRNP.
- Consider and evaluate the varied interests of stakeholders, such as other federal agencies (USFS and Bureau of Land Management [BLM]), state of North Dakota, and private entities.

Scope of the Analysis

The focus of the analysis is to develop elk management methods and strategies for TRNP in cooperation with local, state, and regional entities as well as other federal agencies. Monitoring protocols and action indicators will be a component of all action alternatives evaluated in the analysis. This will ensure that

the elk population of TRNP will be a balanced component of a functioning ecosystem within the park, not a dominant feature or driving force that impairs other park resources and values. TRNP has three management units: North Unit, Elkhorn Ranch Unit, and South Unit. The scope of the analysis will include both the South Unit and the North Unit. However, the South Unit is the only unit where elk were reintroduced and where previous management actions have been implemented.

Public understanding and support for any future efforts to maintain elk populations as a healthy component of TRNP ecosystem are extremely important. Because the issue of elk management is of public concern, an EIS was determined to be the most appropriate compliance pathway for this process.

Elk management is a long-term issue. The "life" of this plan will be approximately 15 years. However, the plan may continue to be used beyond that period if the management program developed is still meeting management objectives at the end of the 15-year period.

5.0 PRELIMINARY ISSUES

The following sections summarize the identified impact topics and issues that exist now or may arise during consideration and analysis of alternatives. Under DO-12, issues are defined as concerns or obstacles to achieving a park goal or as environmental problems. Issue statements, some of which were developed at the internal scoping meeting, are associated with each issue topic. Issues statements describe the relationship between a resource and an action. Others were prepared after the meeting based on information collected and summarized from the meeting. In these sections, each issue topic is described, followed by a concise and relevant issue statement.

Soundscapes

During the autumn elk rut, elk bugling creates a desirable soundscape. Noises from shooting or roundups may affect soundscapes.

Issue Statement: Alternatives that consider noise-generating equipment (e.g., firearms, helicopters) may alter TRNP's soundscape. High densities of elk may increase opportunities to hear elk bugling.

Water Quality and Quantity

Higher elk densities may increase competition for available water sources. They may increase turbidity, total suspended solids, nutrient levels, and fecal coliform levels in surface waters. The potential for transmission of water-borne disease may increase at higher elk densities. Elk may draw down water developments and seek out other water sources. Competition for water resources may increase, especially during drought years.

Issue Statement: High densities of elk may be detrimental to water quality and quantity within TRNP, which may affect elk, other large herbivores, flora and fauna, other natural resources, and visitor experience.

Vegetation

Higher elk densities may affect plant community structure. TRNP is currently a unique regional resource because, compared to lands surrounding the park, its vegetation is lightly exploited by herbivores. The rangeland condition within TRNP is an island of comparatively intact and healthy plant communities that is surrounded by heavily-grazed and species-poor plant communities.

Issue Statement: Increased and sustained elk densities may be detrimental to the structure, composition, and function of regionally unique plant communities in TRNP.

Wetlands

Increased elk populations could potentially disturb wetland vegetation and wetland soils. Elk may alter wetlands by trampling, especially in high-use areas such as near water sources. TRNP does not have much data supporting use of wetland vegetation by elk.

Issue Statement: Increased and sustained elk populations may impact wetland vegetation, soils, and hydrology.

Unique Plant Communities

TRNP is a relatively complete plant community that is dramatically different from surrounding plant communities, which have been subjected to long-term intensive livestock grazing. Higher elk densities could affect unique plant communities within TRNP, which include remnant aspen communities, stands of mixed cottonwood and juniper, woody draws of green ash and elm, and sedge prairies.

Issue Statement: Increased elk populations could diminish the contrast in vegetation community health and structure between TRNP and surrounding landscape and could directly impact unique plant communities within TRNP.

Invasive Plants

Increased elk populations could lead to an increase in the spread and establishment of non-native plants in TRNP.

Issue Statement: Increased elk populations could create disturbance (grazing and trampling) that would increase the potential for establishment and spread of non-native plants.

Ecosystem Processes

Elk populations can influence many ecosystem attributes such as vegetation structure, composition, and function. Increased elk populations in TRNP may affect key processes such as fire and herbivory interactions. Such impacts may detract from the more generalized goals and objectives established for TRNP.

Issue Statement: Increased elk populations could affect ecosystem processes, such as fire and herbivory.

Human Health and Safety

Increased elk populations could increase the potential for human-elk interactions. Potential risk of transmission of CWD to humans is unknown — but public perception of risk could be an issue. Risk of human exposure to giardia and fecal coliforms may increase slightly, although numerous other potential sources already exist. Public and staff safety could be affected by the potential for increased vehicle collisions with elk. Management actions may pose a safety hazard to TRNP staff. If shooting or lethal culling is implemented, risks could be associated with the use of firearms.

Issue Statement: Increased elk populations, as well as alternatives that include the use of firearms, could increase the potential or perceived potential for harm to humans.

Species of Special Concern

Several species identified by the Natural Heritage Program or by TRNP as species of special management concern within TRNP could be affected by increased elk populations. Sensitive animals include black-tailed prairie dogs, bighorn sheep (North Unit only), eagles, and amphibians. Elk may also affect USFS sensitive species.

Issue Statement: Increased elk populations may affect the status, condition, and health of species of special concern and their habitats.

Wildlife

Increased and sustained elk densities may affect wildlife habitat for ground nesting birds, small mammals, and other wildlife and associated habitats. Elk management actions may also affect other wildlife (including the Dakota skipper butterfly and other vegetation-dependent and pollinating species). Bison and feral horses may be more aggressively managed until TRNP is able to manage the elk population. Increased frequency or intensity of large herbivore management actions would likely increase the disturbance to elk, feral horses, and bison. There may be an increase in competition for browse species and changes in habitat and habitat use patterns. Browse competition may be increased with mule deer. Effects to grazing habitats from increased elk populations may encourage prairie dog expansion.

Issue Statement: Increased elk populations, as well as alternatives that include removal of animals, would increase potential conflicts for resources with other wildlife (including increased competition with other herbivores) and could have direct adverse effects on wildlife, including elk.

Wilderness

Additional management actions in wilderness areas may be required, resulting in additional impacts to these designated management areas. Compliance with management guidelines for wilderness during elk management efforts may require increased park resources compared with areas outside of wilderness areas.

Issue Statement: Increased elk populations, as well as alternatives that include the use of firearms or helicopters, could diminish those precise qualities and values that qualify the area as wilderness.

Wildlife Disease

Increased elk populations may influence inter- and intra-species transmission of wildlife diseases (parasitic, bacterial, or viral), especially for density-dependent diseases. If CWD becomes established at TRNP, high elk densities could facilitate transmission.

Issue Statement: Increased elk populations may increase the potential for inter- and intra-species transmission of disease.

Visitor Experience

Sustained elevated elk densities may reach a point of saturation and potentially decrease visitor appeal based on increasingly common occurrence. In contrast to this scenario, increased elk populations in TRNP may be viewed as beneficial by visitors because of the increased probability of seeing elk during visits. Elk management actions in TRNP could alter visitor experience by restricting access to some areas of TRNP during some periods of the year. Park visitation could change during seasons when management activities are occurring. If sustained elevated elk densities impact feral horses and bison that cause their numbers to decrease, this may also impact visitor experience.

Issue Statement: Increased elk populations, as well as alternatives that include the use of firearms, helicopters, or direct reduction, may affect (positive and negative) visitor experience.

Cultural Resources

Higher elk densities could increase physical impacts to cultural resources through trampling or exposing cultural resources. There are numerous cultural sites associated with water sources, and additional impacts may occur to those sites. Too few or too many elk could diminish the cultural landscape.

An increased elk population may be considered a beneficial effect to an ethnographic resource. Similarly, reduced or increased elk populations may be detrimental to other ethnographic and cultural resources.

Issue Statement: Increased elk populations may affect existing cultural and ethnographic resources.

Socioeconomics

Visitation to TRNP and the Medora community may be correlated with expectations of seeing elk. Changes in the elk population may have positive or negative effects on TRNP and the local community. Increased elk populations may have additional socioeconomic impacts including:

- Depredation – increases in elk densities could increase the amount of time that elk spend on areas outside TRNP, and in turn, increase impacts.
- Hunting – increases in elk densities may increase potential for hunting opportunities and associated economic benefits.
- Grazing – increases in elk densities may decrease the value of some grazing lands outside TRNP.
- Potential changes could include increased competition with domestic livestock, decreased range productivity, and increased potential for conflicts with adjacent landowners. Such changes could have direct and indirect effects upon adjacent landowners.
- Property values – increases in elk densities could increase the value of local properties that could be used for lodging, guiding, and other tourism activities associated with elk hunting or wildlife viewing.

Issue Statement: Increased elk populations, as well as alternatives that include an increase in direct reduction within or outside TRNP, could alter the economic potential for TRNP, the Medora community, and adjacent landowners.

Park Operations

Increased elk populations may require additional administration by TRNP staff that could overwhelm the limited budget and staff availability. Higher elk densities could create a need to modify management objectives for other large herbivores, including feral horses and bison. Concessionaires operating within TRNP may benefit from visitor viewing (horseback) and elk retrieval (if in-park lethal control is implemented).

Issue Statement: Increased elk populations, as well as many of the alternatives that require direct NPS staff oversight of or involvement in management activities would require an increased commitment of limited NPS resources (staff, money, time, and equipment).

6.0 PRELIMINARY ALTERNATIVES

The discussion of preliminary alternatives during the internal scoping meeting focused on the components or potential actions that could become part of an alternative. The discussion did not proceed to the point where a complete set of alternatives could be formulated. Therefore, this chapter describes the no action alternative and preliminary action alternatives as they were developed during the internal scoping meeting. The preliminary action alternatives address different methods for managing elk populations to achieve specific management objectives. The alternatives could be used individually or in some combination that would be appropriate for achieving the management objectives.

All alternatives selected for detailed analysis must ultimately meet all objectives to a large degree, and resolve the purpose and need for action. However, preliminary action alternatives were developed independent of their feasibility of implementation. General ground rules used to develop preliminary alternatives included:

- Consider everything, even ideas that are "not reasonable"
- No limits or bounds
- May require changes in current policy or regulation
- No preconceived judgment
- Consider other perspectives (e.g., the public's)
- Provide specific details later

The objective of this exercise was to develop a comprehensive range of alternatives that could be considered for this project. Each alternative was discussed to identify potential opportunities and constraints. Following public scoping, each alternative will then be analyzed to determine whether it complies with applicable NPS policies, satisfies the project objectives, and resolves the purpose and need for action.

For an alternative to be considered in depth in the NEPA process, it must meet project objectives. The alternatives must also be developed with environmental resources (rather than cost) as the primary determinant. The Council on Environmental Quality (CEQ) has defined reasonable alternatives as those that are economically and technically feasible, and that show evidence of common sense (NPS 2001). Some of the ideas and elements of alternatives discussed in the following sections may not meet the reasonable alternative definition since this project is in the early phases of the planning process. However, alternatives evaluated in the EIS document will need to satisfy the reasonable definition.

Elements of the No Action Alternative

As required under CEQ regulations 40 CFR 1502.14(d) the alternatives analysis in an EIS must "include the alternative of no action." As a mandated alternative, the no action alternative "sets a baseline of existing impact continued into the future against which to compare impacts of action alternatives" (Director's Order 12, Section 2.7). This alternative would serve as the baseline for analyzing and comparing the effects of other alternatives. Under the no action alternative, elk management options available to TRNP would be limited to continued hunting outside TRNP. The effective NPS moratorium on cervid translocation means elk cannot be moved outside TRNP's boundaries. As a result, roundups and translocation of elk would not be conducted under the no action alternative.

Efforts would be made to continue monitoring elk movement patterns within and outside TRNP, as long as there is funding available to support these efforts. Additional data would be collected on seasonal diet preferences on elk and other ungulates, as funding permits. Most existing grants will expire by 2005, and

it is unknown whether additional grant monies would be obtained to continue monitoring and data collection efforts. Additional data would be collected on seasonal diet preferences on elk and other ungulates as funding permits. Other existing resource management efforts, such as bison and wild horse management, prescribed fire and exotic plant management, would continue. TRNP may take a more aggressive approach for managing bison and wild horses under this alternative since these animals can still be corralled and removed from TRNP. More bison and feral horses may be removed to offset the increased forage demand that would occur as the elk population grows. TRNP would continue to monitor vegetation at permanent range transects as well as develop a vegetation monitoring protocol to gather baseline data on native plant species. Current efforts would continue through 2005 to record the impacts of elk at watering holes. Educational and interpretive measures would continue to inform the public about elk ecology and their potential impacts on park resources.

Elements Common to All Action Alternatives

The following elements would likely be common to all alternatives:

- Data such as age, weight, and sex could be collected under all alternatives.
- All lethal alternatives would involve disease surveillance and testing. Brain stems and retropharyngeal lymph nodes can be removed and tested for CWD regardless of the method of take. If other diseases are of interest or importance, additional samples could be taken.
- Although all meat would be tested, there would be no way for TRNP to confirm that the animal is CWD free. The buyer or acceptor of the meat would have to accept the liability/risk for consuming the meat.
- Under all alternatives, biologists would establish objectives for sex and age ratios, and individual strategies under each alternative would be developed to meet those objectives. For example, removing female elk would have a more profound effect on the population growth rate than targeting bull elk.
- Every effort would be made to make the reduction as humane as possible, minimize suffering by elk, and minimize disturbance to the public.
- Public access to some areas of TRNP may be restricted during days designated for elk reduction activities.
- Where applicable, compliance with all federal firearm laws administered by the Bureau of Alcohol, Tobacco, and Firearms would be required.
- Harvested elk would be collected, field-dressed, processed, and stored in a manner consistent with federal and state laws and regulations.

Elements of an Alternative for Direct Reduction Inside TRNP

Under this alternative, free-ranging elk would be shot within TRNP. Extensive data would be collected on elk carcasses, disease screening would occur, and all research opportunities would be explored and facilitated when feasible. This effort would not have an immediate influence on the current population size, but would have eventual ramifications on the population growth rate.

Direct reduction within TRNP would require several elements including:

- Who would take the action,
- Method of action, and
- Fate of elk carcasses

Several options for each of these elements were identified. Options for who would implement direct reduction in TRNP were identified during the scoping meeting. These include NPS staff and cooperating agencies, public hunters with specially granted access and permits from the NDGF, deputized public hunters acting as park agents, professional sharpshooters, and tribal members with specially granted access and NDGF issued permits. Options identified for elk reduction included helicopters with sharpshooters, spotlighting and shooting, baiting and shooting, radiomarking and shooting, and archery. Carcasses, meat, and other products derived from direct reduction could be donated, sold, buried, left in the field, or kept by the persons taking the action. Decisions regarding the disposition of elk carcasses would consider implications for the potential transmission of CWD.

Who Would Take Action

NPS Staff and Cooperating Agencies

NPS staff and cooperating agencies (USFS and NDGF) would carry out population reduction actions. Only people who have the appropriate skills and training in the use of firearms, sharp-shooting, and public safety would participate in the reduction. This alternative could be implemented during the fall or winter months when most elk are present within TRNP and when there are few visitors. Harvested elk would be collected, field-dressed, processed, and stored or disposed of in a manner consistent with federal and state laws and regulations.

Public

The public would be allowed to shoot elk within TRNP on designated days to reduce the elk population. Hunting would be scheduled during times when park visitor rates are low. This activity would be regulated and would only occur in designated areas that are carefully chosen. Only licensed hunters who meet North Dakota hunting regulations would be eligible to participate. A predetermined number of hunters could be selected by lottery from a pool of applicants. Hunters may be required to attend training and pass a shooting skills test prior to participating in elk management actions. Hunters would be responsible for removal and disposal of elk.

Deputized Park Agents

Authorized agents of TRNP would shoot elk to reduce the population. These would include deputized members of the public. Only people who have the appropriate skills and training in the use of firearms, sharp-shooting, and public safety would participate in the reduction. Agents would be responsible for collecting, field dressing, processing, and transporting elk.

Hire/Outsource

Contractors would be hired to shoot elk to reduce the population. Contractors would have appropriate skills and training in the use of firearms, sharpshooting, and public safety. TRNP would develop very specific guidelines in the terms of the contract.

Tribes

Members of American Indian tribes would be allowed within TRNP on designated days to reduce the elk population. Shooting would be scheduled during times when visitor rates in TRNP are low. This activity would be regulated, and would only occur in designated areas that are carefully chosen. Licensed tribal members who meet North Dakota hunting regulations would be eligible to participate. Tribal members would be responsible for removal and disposal of elk.

Methods of Action

Helicopters with Sharpshooters

Sharpshooters riding in helicopters would shoot elk. Sharpshooters would likely be contracted under this alternative. Contractors would have the appropriate skills and training in the use of firearms, sharpshooting, and public safety. Harvested elk would likely be left in place, although they could possibly be removed using the helicopter and the carcass could be donated. TRNP would develop very specific guidelines in the terms of the contract.

Spotlight and Shoot

Spotlighting would be conducted at night in areas that are not visible to the public. Elk would be spotlighted, and then harvested by sharpshooters. Because a high degree of skill would be required, contractors would likely be hired for this alternative. They would have the appropriate skills and training in the use of spotlights, firearms, sharpshooting, and public safety. TRNP would develop very specific guidelines in the terms of the contract.

Bait and Shoot

Bait stations would be used to attract elk away from public use areas. Park agents or contractors would then shoot elk attracted to baited locations.

Radiomarking and Shoot

TRNP staff would directly track radiocollared elk to their exact location. Park agents or contractors would then shoot elk once they were located.

Archery

Under this alternative, archery would be used rather than guns for elk reduction. The public, tribes, or contractors could implement this alternative.

Fate of Elk Carcasses

Disease Testing

All lethal alternatives will involve disease surveillance and testing. Brain stems and retropharyngeal lymph nodes can be removed and tested for CWD regardless of the method of take. If other diseases are of interest or importance, additional samples may be taken.

Donate or Sell the Meat

Harvested elk would be donated or sold to interested parties.

Shooters Remove Meat from TRNP for Personal Use

Shooters would be responsible for removing, transporting, and processing the carcasses.

Leave Carcasses in Park

Elk carcasses would be left in place to naturally decompose. Elk carcasses could provide food for predators and scavengers within TRNP.

Landfill Carcasses

Elk carcasses would be landfilled to the extent that state law allows. Carcasses would be removed from the park and taken to a sanitary landfill that would accept them.

Elements of an Alternative for Direct Reduction Outside TRNP

A greater number of hunting licenses could be issued to the public to increase the number of elk taken outside TRNP. Hunters would be able to harvest elk on accessible private and public lands. The hunting seasons for elk management units could also be extended to increase the potential for hunter success.

Elements of an Alternative for the Redistribution of Elk

Several elements of an alternative pertaining to redistributing elk to habitats outside TRNP were identified. Considered as part of this alternative are:

- Directly redistribute elk to areas outside TRNP
- Alter habitat availability and/or suitability

These elements are discussed in additional detail in the following sections.

Directly Redistribute Elk to Areas Outside TRNP

Hazing

Helicopters or riders on horseback would be used to redistribute elk to areas outside TRNP. The timing of hazing would be coordinated to correspond with the hunting seasons outside TRNP.

Alter Physical Barriers

Fences would be modified to allow elk to leave TRNP, but to discourage them from re-entering TRNP. Raising fences after elk leave, restricting elk to certain areas, constructing barriers around sensitive areas, or creating one-way gates could be used to modify barriers. Fences could also be installed to keep elk away from sensitive natural and cultural resources. Small areas of known sensitive resources, such as rare plant populations or important cultural resources, would be fenced to protect them from elk browsing. Small, experimental fenced plots could be installed around rare plants to encourage reproduction.

Alter Habitat Availability and/or Suitability

Alter Land Management Practices

Under this alternative, private landowners or agencies would alter their land management practices to improve the quality and availability of elk habitat. Incentives could be created to encourage landowners to improve habitat for elk on their properties.

Restore Landscape to a more Natural State

TRNP has improved a number of natural springs to provide a consistent water source for ungulates such as bison. Under this alternative, these non-natural improvements would be removed to discourage use of some areas and to return the landscape to a more natural state.

Increase Human Presence

The Loop Road at TRNP is closed in winter when snow conditions do not permit vehicle travel. Under this alternative, the Loop Road would be plowed and winter recreational activities would be encouraged.

Elements of an Alternative that Allow Population Increase, Monitoring, and Increased Public Tolerance

Under this alternative, the elk population would be allowed to increase without direct management. Supplemental feeding could be used to encourage elk to avoid sensitive areas or private properties. Landowners could be directly compensated for damage to private property. Elk populations would be closely monitored to limit the potential for elk and private landowner conflicts.

Elements of an Alternative for Reintroduction of Predators

Natural elk predators, such as wolves or grizzly bears, would be reintroduced to TRNP. Introduction of sterile or radio-collared animals may be considered under this alternative to help regulate predator populations.

Elements of an Alternative to Remove Most or All Elk

Maintain Low Population Level of Elk

All of the elk would be removed under this alternative. TRNP would conclude that the elk reintroduction "experiment" failed because hunting is not effective for controlling the population. In the absence of natural predators, the population is growing at a very high rate and does not seem to exhibit any density-dependent responses.

Remove Most Elk

The elk population at TRNP would be reduced to a "demonstration herd" that could be easily managed because of its relatively small size.

Elements of an Alternative for Reproductive Control

Under this alternative, reproductive control would be used to manage the elk population. Some vaccines can be remotely applied in the field. For most applications, however, roundups using helicopters would be used to direct elk to a handling facility. Once in the handling facility, contraception would then be used to prevent conception in elk. Current methods of contraception that are available for elk are summarized below:

Immuno Contraception

- Procine Zona Pellucida (PZP) vaccine – PZP is effective for one to multiple years and is only effective in female animals. PZP can be applied via bio-bullet or hand injection. There are good data on PZP efficacy on deer and feral horses. There is some information available regarding the use of PZP in Tule elk. PZP may cause behavioral changes in animals because of its effect on estrus (continued cycling).

- Gonadotropin-releasing hormone (GnRH) vaccine – GnRH vaccine can potentially be used on male or female animals. There are good data on GnRH efficacy in deer, horses, and laboratory animals. The GnRH vaccine is applied by either remote delivery or hand injection. Potential secondary effects in elk include antler loss in bulls. GnRH vaccine may cause anestrous in females, which can decrease or eliminate rut behavior. Anestrous refers to mammals that are not in a state of estrus (are not in heat).

Non-Immuno Contraception

- Leuprolide – Leuprolide is a GnRH agonist that has been approved for use in human medicine. The drug, in its current formulation, is effective for pregnancy prevention through one mating season. There are good data for efficacy and safety in elk. Leuprolide can be applied via remote dart delivery or hand injection.

- Surgical – surgical removal or alteration of reproductive organs is an effective means of halting reproduction. However, it requires a veterinarian to perform the procedure under general or local anesthesia. Either males or females can be treated using this method.

- Note: all methods of chemical contraception currently require the animal to be permanently identified. None of the methods are currently approved for use by the FDA. Only surgical alteration would not have this requirement.

Elements of an Alternative for Euthanasia

Helicopters would be used to direct elk to a handling facility. Elk would be euthanized through either physical or chemical means after being rounded up in a holding facility. Euthanasia is the use of drugs or methods intended to render an animal lifeless while minimizing unnecessary stress and pain. Contrary to other forms of lethal removal, euthanasia is typically conducted by trained professionals in a highly controlled setting. Euthanasia may also be required when other elk management activities result in unintended non-lethal injuries, undue suffering, or mortally wounded animals.

Elements of an Alterative for Translocation

After receiving a waiver from the Directors Guidance July 26, 2002, roundups using helicopters would be used to direct elk to a handling facility. Once in the handling facility, live-captured elk would be tested for various diseases and would be temporarily quarantined. Elk could then be translocated to a location outside the South Unit of TRNP. TRNP could also pursue a waiver to transport elk to the North Unit. Elk could also be transferred to state, federal, or tribal entities, depending on who would accept them. The recipients would compensate TRNP for costs associated with the roundup and would be responsible for transporting the animals from TRNP to their property.

7.0 RELATIONSHIP TO OTHER PLANS, POLICIES, AND ACTIVITIES

Other plans, policies, or foreseeable actions that could affect this project were identified during the internal scoping meeting. This information will be used to evaluate potential cumulative effects associated with the project.

- Actions on private or other agency land
- Development plans
- Management plans

A summary of these documents is provided below.

TRNP

- General Management Plan (to be started in the next 2 years)
- Strategic Plan (to be revised in 2005)
- TRNP Boundary Expansion Study (completed in 2003)
- Wilderness Management Plan (to be completed in the next 2 years)
- Resource Stewardship Plan (to be completed in the next 6 years)
- Bison Management Plan (to be completed in the next 2 years)

USFS

- Dakota Prairie Grasslands Land and Resource Management Plan (completed in 2003)

State

- Updating its 5-year plan (to be completed around January 1, 2005), which will address cooperating agencies
- Strategic Plan (to be completed in the next 2 years)

City of Medora

- Update to city ordinance and zoning
- Strategic Plan (to be completed in 2005)

County

- Billings County land use plan was completed approximately 5 years ago

Foreseeable Actions

- Bison roundups
- Feral horse roundups
- Update and improve handling facility (increase size and capacity)
- Prescribed fire
- Exotic plant control
- USDA CWD certification rules

- Medora golf course
- Oil and gas development
- Coal-fired power plant
- Grazing organizations
- Highway 85 development (Theodore Roosevelt Expressway)
- Dirt Road – I94 to Elkhorn Road (county proposal to construct a 45- to 50-mile segment of gravel road)
- Conversion of large ranches to small ranchettes or home sites.

Other Factors

- Wildlife diseases that could compound the issue if identified in the herd (Johne's Disease [*Mycobacterium paratuberculosis*], bovine brucellosis, bovine tuberculosis, extreme parasite loads, etc.).

8.0 PUBLIC PARTICIPATION STRATEGIES

A public involvement plan will be developed during the next phase of this project. The public involvement plan will outline the steps, schedules, and format for soliciting public input during the public scoping and public comment periods. The general framework for the public participation program was established during the meeting and is described in the following sections.

New Policy Regarding Public Participation

In accordance with NEPA and DO-12, projects need to involve the public to provide them with project information and to give them the opportunity to participate in the process. The "no surprises" ethic encourages open, honest, and consistent communication with the public. Several changes to DO-12 related to public participation are also imminent. These changes include:

- Consensus based decision-making — NPS projects should include all interested parties and ensure that the decision-maker gives serious consideration to stakeholders' input. Full consideration is given to any reasonable alternative(s) put forth by participating communities. The objective is to gain consensus on the scope of the project, prevent delays, and document that the community's input has been considered when evaluating the proposed action and the final decision.

- Community-based NEPA training — As part of public scoping meetings, the NPS will provide broad training to "demystify" the NEPA process. The training highlights how local participants can effectively become involved in the process.

General Approach

TRNP's general approach is summarized below:

- TRNP will solicit as much input from the public as possible. The citizens of North Dakota and nearby states may have good ideas to help solve the elk management issue.

- Five public meetings in North Dakota are proposed to achieve good coverage throughout the state. Public meetings are proposed in Medora, Dickinson, Bismarck, Fargo, and Minot.

- Methods that may be used to solicit public input include:
  - The project should include regular news releases informing the public about the status of the project.
  - The state has 16 advisory board meetings scheduled for 2004. NDGF invited TRNP to participate in these meetings.
  - NDGF produces public service programs about the state's wildlife that can be shared with all television stations. This is another medium available for dissemination of project information.
  - TRNP has a website where project-related information could be posted.
  - The state could include a link from its website to TRNP website.
  - Fliers could be distributed at kiosks and visitor centers.
  - TRNP publishes an annual park newspaper.
  - TRNP could work with all available media to produce articles about the planning process.

Public Meeting Format

Several approaches were discussed for how to conduct public meetings. These approaches included hearings, meetings, open house, and workshop formats. The group generally agreed that open house formats are preferred to prevent grandstanding. Presentations at the beginning of an open house by TRNP staff (or contractor) are often useful for introducing the intent, goal, and process for the meeting. An overview of the NEPA process could also be provided during this initial presentation. The meetings could be conducted by having an initial ½-hour presentation followed by an open house with various work stations. NDGF suggested that various experts could be situated throughout the open house. Potential expertise could include an elk expert, a NEPA expert, a CWD expert, and someone stationed to record comments and suggested alternatives.

The project mailing list was also discussed. Greystone has been maintaining TRNP's mailing list for an exotic plant management project. This list could be expanded to include other individuals and agencies that might be interested in the elk management issue.

Interest Groups and Stakeholders

A preliminary list of potential interest groups and stakeholders has been developed for this project. The following groups have been identified as interest groups or stakeholders:

- Non-government Organizations
  - The Nature Conservancy
  - Sierra Club
  - Audubon Society
  - National Parks Conservation Association
  - Badlands Conservation Alliance
  - Rocky Mountain Elk Foundation
  - People for the Ethical Treatment of Animals (PETA)
  - Friends of Air, Water, and Nature
  - Humane Society of the U.S.
  - Animal rights groups

- Agencies and Government Organizations
  - Federal
    - U.S. Forest Service
    - U.S. Bureau of Land Management
    - U.S. Army Corps of Engineers
    - U.S. Fish and Wildlife Service
    - U.S. Department of Agriculture
    - Federal legislators
  - Tribal
    - Three Affiliated Tribes (TAT) and other tribes on TRNP government-to-government consultation list
  - State
    - State of North Dakota
    - North Dakota Game and Fish (NDGF)
    - North Dakota State Parks and Recreation
    - North Dakota Tourism Department
    - Governor's Office

        - Key legislators
        - State Veterinarian
        - North Dakota Heritage Program
        - State Historic Preservation Office
        - State Agriculture Department
        - School Trust Lands
    - Local
        - County Commissioners of western counties
        - Area Tourism Boards and Convention and Visitors Bureaus
        - Local city governments
        - Local legislators

- Grazing Associations
    - Medora Grazing Association
    - Golden Valley
    - McKenzie
    - Horse Creek
    - Little Missouri

- Professional/Scientific Organizations
    - Wildlife Management Institute

9.0 COORDINATION AND COMMUNICATION PROTOCOLS

Protocols for coordination and communication established for this project are described in the following sections.

Project Points of Contact

The following points of contact were established for this project:

- Bruce Kaye was designated as the project point of contact for the public at TRNP. TRNP staff will be informed that Bruce is the point of contact. Penny Knuckles will be the contractor's (Greystone's) point of contact.
- Sarah Bransom was designated as the "interim" project point of contact at the EQD. The Biological Resources Management Division (BRMD) is trying to hire another staff member who would be responsible for overseeing this project and the Wind Cave National Park Elk Management Plan.
- Sue Jennings of the Midwest Regional Office will help to oversee the NEPA process.

Administrative Record

The administrative record serves as the project "paper trail" and will document agency decisions. Information added to the administrative records includes:

- E-mails
- Correspondence with other agencies
- Meeting minutes
- Conference calls
- Telephone conversation transcripts
- Articles and books
- Drafts of Documents (milestone drafts to document decisions that were made)
- Final copies of all documents and work products

The following information will not be included in the administrative record:

- Personal e-mails
- Non-substantive changes to documents
- Personal notes and individual's files

General guidelines were established during the internal scoping meeting for how to maintain the administrative record. In general, the sender of an email or producer of a document is responsible for adding it to the administrative record. TRNP, EQD, the Midwestern Regional Office, and the contractor will each receive a copy of the EQD's administrative record database. Each party will be responsible for maintaining their database. The database documents the date, author, general topic, and assigns each document a unique numeric identifier. Each party should also maintain hard copies of all administrative record documents.

10.0 TRNP RESOURCE INFORMATION AND DATA NEEDS

A summary of resource information available for TRNP was discussed. TRNP was asked to provide the relevant documents/data to satisfy a number of data needs.

11.0 PROJECT SCHEDULE

General Project Schedule

The following is a summary of the project schedule:

- June 11, 2004 - Internal Draft Internal Scoping Report submitted for the project team's review. This document included meeting minutes and the report.
- July 23, 2004 – Final Draft Internal Scoping Report submitted for project team review.
- November 2004 – Completion of Phase I of project.

Notice of Intent

The NOI was published in the Federal Register on August 31, 2004 (FR Doc. 04-19789).

Public Scoping Meetings

The schedule for public scoping meetings is:

- November 29, 2004 – Dickinson, North Dakota
- November 30, 2004 – Minot, North Dakota
- December 1, 2004 – Fargo, North Dakota
- December 2, 2004 – Bismarck, North Dakota
- December 6, 2004 – Medora, North Dakota

All meetings will be held between 5:00 pm to 8:30 pm (MST for Dickinson and Medora, CST for meetings in Minot, Fargo, and Bismarck). Half hour training sessions on NEPA and elk management issues at TRNP will be held at 5:30 pm and 7:00 pm.

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APPENDIX A — INTERAGENCY AGREEMENTS

APPENDIX B — RESEARCH BIBLIOGRAPHY

ATTACHMENT A - CHRONOLOGY OF THE REINTRODUCTION AND MANAGEMENT OF THEODORE ROOSEVELT NATIONAL PARK'S ELK POPULATION